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APPENDIX E. RESULTS OF INDIVIDUAL LOGISTIC REGRESSION MODELS

The results for the individual logistic regression models (LRMs) are presented in Table E-1.

- Columns 1 and 2 present the biological and chemical endpoints such that each row in this table represents an individual LRM.
- Columns 3 and 4 present the total number of samples and the number of toxic samples retained in the screened data set, respectively (i.e., after the low concentration toxic stations have been removed; Step 4, Section 5.3.1).
- Columns 5 and 6 present the Chi-square goodness-of-fit statistic and its p-value. Chi-square measures the change in deviance between the null model (intercept only) and the full model with slope and intercept (hence, a one-degree-of-freedom test). The measure of deviance is based on the log-likelihood, which indicates the probability of obtaining the observed toxicological responses, given the chemical responses and the specified model parameters. The log-likelihood function is maximized for the final slope and intercept parameters selected for the model, just as the sum of squares is minimized to select the slope and intercept in ordinary least squares regression. The Chi-square test for logistic regression is analogous to the F-test for ordinary least squares regression.
- Column 7 presents the R^2_L , the likelihood ratio R^2 . It is equal to the change in deviance (the value of the Chi-square statistic) divided by the deviance associated with the null model. It is a substantive measure of the goodness-of-fit of the model that is not dependent upon sample size or the base rate of toxicity in the data (Menard 2000). It varies between zero and one, with zero indicating no relationship between chemistry and rate of toxicity and one indicating a perfect fit. R^2_L values of ##### indicates incalculable, when 0 toxic samples were retained in the screened data set.
- Columns 8 and 9 present the slope and intercept parameters, respectively, for the best fit model (B_0 and B_1 in Equation 1, Step 5, Section 5.3.1).
- Column 10 presents comments that indicate if any individual models were excluded (based on Chi-square p-values > 0.01 or fewer than two toxic stations retained in the screened data set) or were considered questionable or unreliable (based on $R^2_L < 0.20$ or fewer than five toxic stations retained in the screened data set).

A plot of the data and the best fit model for each of the models described in Table E-1 are shown in Figures E-1 to E-66. The nine models constructed for each chemical analyte are

shown on a single page. For each plot within a page, the \log_{10} chemical concentration is shown on the x-axis, and the proportion of samples toxic within a concentration interval are shown on the y-axis. The symbol plotted at each (x,y) value is the number of samples within that concentration interval. All biological endpoints for an effects level are shown on a single row, and all endpoints for a species are shown in a single column. The title of each plot indicates the biological endpoint (e.g., hym.80 is Level 2 [80% difference] for *Hyalella* mortality).

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Table E-1. Results for Individual LRM

Effect Level	Chemical	Screened Data Set						Comment
		# Samps Retained	# Toxic Retained	Chi-sq Statistic	Chi-sq p-value	R ² _L	LRM Slope	
Chironomus pooled								
chp.L3	Ammonia	220	19	30.69	0.00	0.24	6.00	-14.51
chp.L3	Sulfide	191	15	53.81	0.00	0.51	3.80	-7.37
chp.L3	Fines (%)	222	21	18.15	0.00	0.13	4.65	-10.32
chp.L3	Aluminum	216	15	11.98	0.00	0.11	8.30	-38.96
chp.L3	Antimony	144	7	16.20	0.00	0.29	2.63	-2.73
chp.L3	Arsenic	214	13	14.81	0.00	0.15	4.30	-5.79
chp.L3	Cadmium	214	15	18.63	0.00	0.17	3.31	-1.16
chp.L3	Chromium	217	17	13.50	0.00	0.11	4.08	-8.84
chp.L3	Copper	210	9	10.67	0.00	0.14	2.48	-7.67
chp.L3	Lead	211	10	18.00	0.00	0.22	2.64	-7.19
chp.L3	Mercury	212	15	27.38	0.00	0.25	4.05	1.15
chp.L3	Nickel	206	16	15.29	0.00	0.14	6.06	-11.19
chp.L3	Selenium	112	10	11.16	0.00	0.17	7.37	3.49
chp.L3	Silver	220	19	30.18	0.00	0.23	3.93	-0.03
chp.L3	Zinc	210	9	17.26	0.00	0.23	4.29	-12.97
chp.L3	Butyltin	65	0	0.00	0.97	#####	0.00	-11.20
chp.L3	Dibutyltin	68	0	0.00	0.97	#####	0.00	-11.20
chp.L3	Tributyltin	68	1	1.18	0.28	0.11	1.22	-6.69
chp.L3	Acenaphthene	194	13	60.29	0.00	0.63	2.32	-9.02
chp.L3	Anthracene	197	15	63.80	0.00	0.60	2.39	-8.97
chp.L3	Fluorene	193	14	61.63	0.00	0.61	2.42	-8.71
chp.L3	2-methylnaphthalene	193	12	55.24	0.00	0.61	2.40	-7.56
chp.L3	Acenaphthylene	197	13	56.64	0.00	0.59	2.75	-8.55
chp.L3	Naphthalene	159	14	55.06	0.00	0.58	2.61	-8.55
chp.L3	Phenanthrene	205	14	62.79	0.00	0.61	2.36	-10.64
chp.L3	Benzo(a)anthracene	206	16	59.41	0.00	0.53	2.38	-9.67
chp.L3	Benzo(a)pyrene	204	14	60.53	0.00	0.59	2.70	-11.40
chp.L3	Benzo(b)fluoranthene	204	15	58.59	0.00	0.55	2.59	-10.87
chp.L3	Benzo(ghi)perylene	205	14	61.70	0.00	0.60	2.80	-11.52
chp.L3	Benzo(k)fluoranthene	202	16	58.49	0.00	0.52	2.50	-9.18
chp.L3	Chrysene	202	15	59.27	0.00	0.55	2.59	-10.79
chp.L3	Dibenzanthracene	207	15	60.67	0.00	0.56	2.79	-9.02
chp.L3	Fluoranthene	208	15	63.19	0.00	0.59	2.60	-11.72
chp.L3	Indeno(c,d)pyrene	205	15	60.01	0.00	0.56	2.58	-10.52
chp.L3	Pyrene	207	14	63.62	0.00	0.62	2.63	-12.14

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Table E-1. Results for Individual LRM

Effect Level	Chemical	Screened Data Set							Comment
		# Samps Retained	# Toxic Retained	Chi-sq Statistic	Chi-sq p-value	R ² _L	LRM Slope	LRM Intercept	
chp.L3	Total LPAH	205	14	63.65	0.00	0.62	2.47	-11.71	
chp.L3	Total HPAH	210	15	61.84	0.00	0.57	2.56	-13.32	
chp.L3	Total PAHs	211	15	63.15	0.00	0.58	2.53	-13.51	
chp.L3	Diesel-range hydrocarbons	141	21	65.66	0.00	0.55	4.57	-13.32	
chp.L3	Residual organics	131	18	56.30	0.00	0.54	5.83	-19.41	
chp.L3	Dibenzofuran	194	15	57.97	0.00	0.55	2.53	-7.24	
chp.L3	Hexachlorobenzene	103	3	7.20	0.01	0.27	2.12	-4.30	Questionable reliability (fewer than 5 toxic stations retained)
chp.L3	Pentachlorodibenzofuran 12378	38	0	0.00	0.97	#####	0.00	-11.20	Exclude (chi.p ≥ 0.01)
chp.L3	Pentachlorodibenzodioxin, homolo	47	2	3.88	0.05	0.23	2.59	-3.63	Exclude (chi.p ≥ 0.01)
chp.L3	TEQ mammal (0.5 detection limit)	56	0	0.00	0.97	#####	0.00	-11.20	Exclude (chi.p ≥ 0.01)
chp.L3	Total dioxins/furans	56	0	0.00	0.97	#####	0.00	-11.20	Exclude (chi.p ≥ 0.01)
chp.L3	Total PCBs	165	7	19.13	0.00	0.33	2.44	-9.08	
chp.L3	Aldrin	48	1	4.36	0.04	0.45	2.07	-5.83	Exclude (chi.p ≥ 0.01)
chp.L3	alpha-Hexachlorocyclohexane	48	1	9.71	0.00	1.00	22.87	-16.83	Exclude (only 1 hit retained)
chp.L3	beta-Hexachlorocyclohexane	83	11	25.37	0.00	0.39	4.09	-3.63	
chp.L3	delta-Hexachlorocyclohexane	33	1	3.69	0.05	0.41	9.97	-1.32	Exclude (chi.p ≥ 0.01)
chp.L3	Carbazole	155	16	53.23	0.00	0.52	2.65	-7.62	
chp.L3	Methoxychlor	35	1	1.09	0.30	0.12	2.34	-4.99	Exclude (chi.p ≥ 0.01)
chp.L3	cis-Nonachlor	53	5	10.77	0.00	0.33	4.68	-2.10	
chp.L3	trans-Nonachlor	72	2	2.72	0.10	0.15	2.80	-2.99	Exclude (chi.p ≥ 0.01)
chp.L3	Total chlordane	173	12	35.80	0.00	0.41	2.78	-4.24	
chp.L3	DDD	209	17	60.69	0.00	0.51	2.57	-6.45	
chp.L3	DDE	201	14	48.98	0.00	0.48	2.82	-5.66	
chp.L3	Total.ddt	176	5	22.65	0.00	0.50	1.96	-6.72	
chp.L3	Total.ddts	208	14	51.66	0.00	0.50	2.41	-7.27	
chp.L3	Total endosulfans	39	4	12.83	0.00	0.50	2.55	-3.17	Questionable reliability (fewer than 5 toxic stations retained)
chp.L3	4-Methylphenol	75	6	11.63	0.00	0.28	2.75	-6.99	
chp.L3	Pentachlorophenol	44	2	2.41	0.12	0.15	1.90	-5.79	Exclude (chi.p ≥ 0.01)
chp.L3	Phenol	66	1	10.35	0.00	1.00	16.15	-39.44	Exclude (only 1 hit retained)
chp.L3	bis(2-ethylhexyl) phthalate	141	1	2.26	0.13	0.19	1.34	-8.67	Exclude (chi.p ≥ 0.01)
chp.L3	Butylbenzyl phthalate	66	2	2.45	0.12	0.14	1.53	-6.38	Exclude (chi.p ≥ 0.01)
chp.L3	Dibutyl phthalate	94	6	12.93	0.00	0.29	2.36	-6.53	
chp.L2	Phenol	63	1	10.26	0.00	1.00	16.27	-39.75	Exclude (only 1 hit retained)
chp.L2	alpha-Hexachlorocyclohexane	46	1	9.62	0.00	1.00	23.00	-16.93	Exclude (only 1 hit retained)
chp.L2	Total LPAH	198	17	76.95	0.00	0.66	2.77	-12.43	
chp.L2	Phenanthrene	198	17	76.61	0.00	0.66	2.69	-11.36	

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Effect Level	Chemical	Screened Data Set							Comment
		# Samps Retained	# Toxic Retained	Chi-sq Statistic	Chi-sq p-value	R ² _L	LRM Slope	LRM Intercept	
chp.L2	Fluorene	186	17	74.63	0.00	0.66	2.70	-9.02	
chp.L2	Anthracene	190	18	76.90	0.00	0.65	2.69	-9.43	
chp.L2	2-methylnaphthalene	185	14	63.83	0.00	0.64	2.72	-7.85	
chp.L2	Acenaphthene	189	18	74.95	0.00	0.63	2.39	-8.36	
chp.L2	Benzo(a)pyrene	196	16	69.67	0.00	0.63	2.91	-11.85	
chp.L2	Acenaphthylene	189	15	65.06	0.00	0.62	2.93	-8.65	
chp.L2	Total PAHs	204	18	74.26	0.00	0.61	2.73	-13.99	
chp.L2	Pyrene	201	18	73.91	0.00	0.61	2.63	-11.47	
chp.L2	Dibenzanthracene	199	17	70.16	0.00	0.60	3.06	-9.44	
chp.L2	Dibenzofuran	187	18	70.57	0.00	0.60	2.89	-7.61	
chp.L2	Fluoranthene	202	19	74.10	0.00	0.59	2.68	-11.44	
chp.L2	Benzo(ghi)perylene	199	18	69.89	0.00	0.58	2.68	-10.46	
chp.L2	Indeno(c,d)pyrene	198	18	69.25	0.00	0.57	2.69	-10.44	
chp.L2	Total HPAH	204	19	71.58	0.00	0.57	2.59	-12.89	
chp.L2	Diesel-range hydrocarbons	139	26	75.68	0.00	0.56	5.31	-14.63	
chp.L2	Naphthalene	155	19	64.86	0.00	0.56	2.77	-8.15	
chp.L2	Benzo(k)fluoranthene	194	18	67.22	0.00	0.56	2.72	-9.57	
chp.L2	Benzo(b)fluoranthene	197	18	67.10	0.00	0.56	2.68	-10.77	
chp.L2	Dibutyl phthalate	94	9	32.92	0.00	0.55	4.60	-10.17	
chp.L2	Benzo(a)anthracene	199	19	69.12	0.00	0.55	2.54	-9.80	
chp.L2	Carbazole	150	19	62.79	0.00	0.55	3.07	-8.16	
chp.L2	Chrysene	196	19	68.50	0.00	0.55	2.63	-10.39	
chp.L2	DDD	203	19	63.63	0.00	0.50	2.49	-6.02	
chp.L2	Residual organics	127	22	58.59	0.00	0.50	5.83	-18.87	
chp.L2	Total endosulfans	37	4	12.66	0.00	0.50	2.50	-3.07	Questionable reliability (fewer than 5 toxic stations retained)
chp.L2	Total.ddt	168	5	22.45	0.00	0.50	1.93	-6.58	
chp.L2	Total.ddts	202	16	54.44	0.00	0.49	2.32	-6.77	
chp.L2	DDE	196	17	53.04	0.00	0.46	2.75	-5.15	
chp.L2	Sulfide	193	26	67.74	0.00	0.44	3.56	-5.91	
chp.L2	Aldrin	45	1	4.25	0.04	0.44	2.05	-5.78	Exclude (chi.p ≥ 0.01)
chp.L2	Total chlordane	166	12	35.85	0.00	0.42	2.75	-4.16	
chp.L2	delta-Hexachlorocyclohexane	31	1	3.57	0.06	0.40	9.89	-1.32	Exclude (chi.p ≥ 0.01)
chp.L2	Antimony	139	9	23.25	0.00	0.35	3.00	-2.43	
chp.L2	beta-Hexachlorocyclohexane	80	13	24.18	0.00	0.34	3.63	-3.05	
chp.L2	Lead	206	15	35.80	0.00	0.33	3.65	-8.40	
chp.L2	Total PCBs	162	11	26.24	0.00	0.33	2.39	-8.31	

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Effect Level	Chemical	Screened Data Set							Comment
		# Samps Retained	# Toxic Retained	Chi-sq Statistic	Chi-sq p-value	R ² _L	LRM Slope	LRM Intercept	
chp.L2	cis-Nonachlor	53	9	14.11	0.00	0.29	4.21	-1.16	
chp.L2	Mercury	209	22	40.03	0.00	0.28	4.48	2.04	
chp.L2	4-Methylphenol	74	9	15.19	0.00	0.28	2.75	-6.38	
chp.L2	Ammonia	217	26	43.33	0.00	0.27	6.56	-15.26	
chp.L2	bis(2-ethylhexyl) phthalate	136	2	5.62	0.02	0.27	1.56	-8.65	Exclude (chi.p ≥ 0.01)
chp.L2	Hexachlorobenzene	96	3	7.03	0.01	0.26	2.08	-4.21	Questionable reliability (fewer than 5 toxic stations retained)
chp.L2	Silver	216	25	37.27	0.00	0.24	4.07	0.44	
chp.L2	Zinc	205	14	24.02	0.00	0.24	4.41	-12.68	
chp.L2	Pentachlorodibenzo-p-dioxin homologs	47	2	3.88	0.05	0.23	2.59	-3.63	Exclude (chi.p ≥ 0.01)
chp.L2	Cadmium	208	19	26.66	0.00	0.21	3.79	-0.69	
chp.L2	Arsenic	209	18	20.03	0.00	0.16	4.54	-5.57	Questionable reliability (R ² _L < 0.20).
chp.L2	Selenium	110	15	13.97	0.00	0.16	6.72	3.53	Questionable reliability (R ² _L < 0.20).
chp.L2	Copper	202	11	13.13	0.00	0.15	2.53	-7.50	Questionable reliability (R ² _L < 0.20).
chp.L2	Butylbenzyl phthalate	65	3	3.62	0.06	0.15	1.55	-5.95	Exclude (chi.p ≥ 0.01)
chp.L2	Pentachlorophenol	40	2	2.31	0.13	0.15	1.82	-5.56	Exclude (chi.p ≥ 0.01)
chp.L2	Fines (%)	221	30	24.27	0.00	0.14	4.31	-9.25	Questionable reliability (R ² _L < 0.20).
chp.L2	Nickel	204	24	18.78	0.00	0.13	6.33	-11.06	Questionable reliability (R ² _L < 0.20).
chp.L2	Aluminum	214	23	18.39	0.00	0.13	8.53	-39.45	Questionable reliability (R ² _L < 0.20).
chp.L2	Methoxychlor	34	1	1.06	0.30	0.12	2.29	-4.93	Exclude (chi.p ≥ 0.01)
chp.L2	trans-Nonachlor	70	4	3.57	0.06	0.12	2.27	-2.21	Exclude (chi.p ≥ 0.01)
chp.L2	Tributyltin	65	1	1.16	0.28	0.11	1.19	-6.58	Exclude (chi.p ≥ 0.01)
chp.L2	Chromium	213	23	16.32	0.00	0.11	4.09	-8.47	Questionable reliability (R ² _L < 0.20).
chp.L2	Dibutyltin	65	0	0.00	0.97	#####	0.00	-11.20	Exclude (chi.p ≥ 0.01)
chp.L2	Butyltin	62	0	0.00	0.97	#####	0.00	-11.20	Exclude (chi.p ≥ 0.01)
chp.L2	TEQ mammal (0.5 detection limit)	56	0	0.00	0.97	#####	0.00	-11.20	Exclude (chi.p ≥ 0.01)
chp.L2	Total dioxins/furans	56	0	0.00	0.97	#####	0.00	-11.20	Exclude (chi.p ≥ 0.01)
chp.L2	1,2,3,7,8-Pentachlorodibenzofuran	38	0	0.00	0.97	#####	0.00	-11.20	Exclude (chi.p ≥ 0.01)
chp.L1	Ammonia	200	39	48.10	0.00	0.24	5.54	-12.36	
chp.L1	Sulfide	165	27	62.91	0.00	0.43	3.35	-5.41	
chp.L1	Fines (%)	202	41	38.06	0.00	0.19	5.06	-10.05	Questionable reliability (R ² _L < 0.20).
chp.L1	Aluminum	194	33	28.96	0.00	0.16	9.59	-43.53	Questionable reliability (R ² _L < 0.20).
chp.L1	Antimony	116	10	22.73	0.00	0.33	2.84	-2.11	
chp.L1	Arsenic	183	22	23.08	0.00	0.17	4.83	-5.36	Questionable reliability (R ² _L < 0.20).
chp.L1	Cadmium	183	23	37.02	0.00	0.27	4.84	0.16	
chp.L1	Chromium	191	31	19.22	0.00	0.11	4.31	-8.29	Questionable reliability (R ² _L < 0.20).
chp.L1	Copper	174	13	18.35	0.00	0.20	2.81	-7.75	Questionable reliability (R ² _L < 0.20).

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Table E-1. Results for Individual LRM

Effect Level	Chemical	Screened Data Set						Comment
		# Samps Retained	# Toxic Retained	Chi-sq Statistic	Chi-sq p-value	R ² _L	LRM Slope	
chp.L1	Lead	178	17	36.91	0.00	0.33	3.62	-8.00
chp.L1	Mercury	185	28	42.42	0.00	0.27	4.19	2.31
chp.L1	Nickel	182	29	20.90	0.00	0.13	7.07	-11.72
chp.L1	Selenium	102	21	25.64	0.00	0.25	8.89	5.81
chp.L1	Silver	189	28	40.70	0.00	0.26	4.17	0.82
chp.L1	Zinc	179	18	30.38	0.00	0.26	4.99	-13.54
chp.L1	Butyltin	51	5	6.60	0.01	0.20	2.17	-4.31
chp.L1	Dibutyltin	52	3	9.57	0.00	0.42	3.54	-9.36
chp.L1	Tributyltin	51	3	11.54	0.00	0.51	3.26	-10.93
chp.L1	Acenaphthene	158	16	68.15	0.00	0.66	2.48	-8.88
chp.L1	Anthracene	161	18	71.67	0.00	0.64	2.61	-9.08
chp.L1	Fluorene	156	16	68.40	0.00	0.66	2.73	-9.26
chp.L1	2-methylnaphthalene	155	13	58.35	0.00	0.65	2.64	-7.71
chp.L1	Acenaphthylene	161	16	62.15	0.00	0.60	2.74	-7.87
chp.L1	Naphthalene	131	18	61.16	0.00	0.58	2.79	-8.19
chp.L1	Phenanthrene	168	17	71.71	0.00	0.65	2.60	-10.96
chp.L1	Benzo(a)anthracene	167	17	64.29	0.00	0.59	2.63	-10.27
chp.L1	Benzo(a)pyrene	168	17	65.84	0.00	0.60	2.69	-10.77
chp.L1	Benzo(b)fluoranthene	168	18	63.23	0.00	0.55	2.62	-10.42
chp.L1	Benzo(ghi)perylene	169	18	67.21	0.00	0.59	2.67	-10.33
chp.L1	Benzo(k)fluoranthene	167	19	63.19	0.00	0.53	2.56	-8.84
chp.L1	Chrysene	168	19	64.31	0.00	0.54	2.55	-10.01
chp.L1	Dibenzanthracene	171	18	65.14	0.00	0.57	2.79	-8.48
chp.L1	Fluoranthene	172	19	70.48	0.00	0.59	2.65	-11.25
chp.L1	Indeno(c,d)pyrene	170	19	66.06	0.00	0.55	2.56	-9.75
chp.L1	Pyrene	172	18	70.26	0.00	0.61	2.59	-11.20
chp.L1	Total LPAH	168	17	71.94	0.00	0.65	2.68	-11.98
chp.L1	Total HPAH	174	19	67.90	0.00	0.57	2.55	-12.59
chp.L1	Total PAHs	174	18	70.05	0.00	0.61	2.67	-13.57
chp.L1	Diesel-range hydrocarbons	126	27	70.12	0.00	0.54	4.86	-13.25
chp.L1	Residual organics	113	23	53.02	0.00	0.46	5.28	-17.00
chp.L1	Dibenzofuran	158	17	64.97	0.00	0.60	2.91	-7.72
chp.L1	Hexachlorobenzene	77	2	5.16	0.02	0.28	1.99	-4.53
chp.L1	1,2,3,7,8-Pentachlorodibenzofuran	33	0	0.00	0.98	#####	0.00	-11.20
chp.L1	Pentachlorodibenzo-p-dioxin homologs	42	2	3.91	0.05	0.24	2.50	-3.44
chp.L1	TEQ mammal (0.5 detection limit)	48	0	0.00	0.97	#####	0.00	-11.20

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Table E-1. Results for Individual LRM

Effect Level	Chemical	Screened Data Set							Comment
		# Samps Retained	# Toxic Retained	Chi-sq Statistic	Chi-sq p-value	R ² _L	LRM Slope	LRM Intercept	
chp.L1	Total dioxins/furans	48	0	0.00	0.97	#####	0.00	-11.20	Exclude (chi.p ≥ 0.01)
chp.L1	Total PCBs	141	14	29.43	0.00	0.32	2.24	-7.40	
chp.L1	Aldrin	31	1	3.72	0.05	0.42	1.88	-5.32	Exclude (chi.p ≥ 0.01)
chp.L1	alpha-Hexachlorocyclohexane	33	2	5.59	0.02	0.37	3.19	-2.19	Exclude (chi.p ≥ 0.01)
chp.L1	beta-Hexachlorocyclohexane	64	16	24.09	0.00	0.33	3.77	-2.39	
chp.L1	delta-Hexachlorocyclohexane	26	3	1.84	0.17	0.10	3.35	-0.82	Exclude (chi.p ≥ 0.01)
chp.L1	Carbazole	129	20	59.76	0.00	0.54	3.08	-8.00	
chp.L1	Methoxychlor	27	2	3.61	0.06	0.25	4.54	-6.25	Exclude (chi.p ≥ 0.01)
chp.L1	cis-Nonachlor	40	8	12.21	0.00	0.30	4.68	-1.21	
chp.L1	trans-Nonachlor	56	6	6.90	0.01	0.18	2.98	-1.36	Questionable reliability (R ² _L < 0.20).
chp.L1	Total chlordane	140	11	34.72	0.00	0.45	2.93	-4.20	
chp.L1	DDD	173	18	60.61	0.00	0.52	2.51	-6.04	
chp.L1	DDE	167	17	52.72	0.00	0.48	2.82	-5.05	
chp.L1	Total.ddt	140	6	23.82	0.00	0.48	1.85	-6.02	
chp.L1	Total.ddts	171	14	51.09	0.00	0.53	2.39	-7.06	
chp.L1	Total endosulfans	30	4	12.09	0.00	0.51	2.32	-2.60	Questionable reliability (fewer than 5 toxic stations retained)
chp.L1	4-Methylphenol	65	12	26.33	0.00	0.42	4.29	-8.22	
chp.L1	Pentachlorophenol	38	3	3.61	0.06	0.17	1.91	-5.20	Exclude (chi.p ≥ 0.01)
chp.L1	Phenol	53	2	10.63	0.00	0.62	5.72	-12.72	Questionable reliability (fewer than 5 toxic stations retained)
chp.L1	bis(2-ethylhexyl) phthalate	114	2	5.95	0.01	0.30	1.60	-8.46	Exclude (chi.p ≥ 0.01)
chp.L1	Butylbenzyl phthalate	53	3	4.78	0.03	0.21	1.96	-6.45	Exclude (chi.p ≥ 0.01)
chp.L1	Dibutyl phthalate	79	10	35.64	0.00	0.59	5.75	-11.81	
Hyalella mortality									
hym.L3	Ammonia	225	10	17.32	0.00	0.21	5.87	-15.03	
hym.L3	Sulfide	198	8	29.71	0.00	0.44	2.99	-7.19	
hym.L3	Fines (%)	229	14	13.14	0.00	0.12	4.95	-11.34	Questionable reliability (R ² _L < 0.20).
hym.L3	Aluminum	223	8	10.15	0.00	0.15	11.07	-51.95	Questionable reliability (R ² _L < 0.20).
hym.L3	Antimony	155	4	9.58	0.00	0.26	2.48	-3.43	Questionable reliability (fewer than 5 toxic stations retained)
hym.L3	Arsenic	221	6	7.89	0.00	0.14	4.21	-6.64	Questionable reliability (R ² _L < 0.20).
hym.L3	Cadmium	222	9	12.84	0.00	0.17	3.26	-1.82	Questionable reliability (R ² _L < 0.20).
hym.L3	Chromium	224	10	11.19	0.00	0.14	4.42	-10.05	Questionable reliability (R ² _L < 0.20).
hym.L3	Copper	219	4	9.34	0.00	0.23	3.36	-10.48	Questionable reliability (fewer than 5 toxic stations retained)
hym.L3	Lead	220	5	8.95	0.00	0.19	2.38	-7.58	Questionable reliability (R ² _L < 0.20).
hym.L3	Mercury	220	9	14.99	0.00	0.20	3.44	0.03	Questionable reliability (R ² _L < 0.20).
hym.L3	Nickel	213	10	8.06	0.00	0.10	4.71	-9.78	Questionable reliability (R ² _L < 0.20).
hym.L3	Selenium	117	6	7.09	0.01	0.15	7.27	2.81	Questionable reliability (R ² _L < 0.20).

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Table E-1. Results for Individual LRM

Effect Level	Chemical	Screened Data Set							Comment
		# Samps Retained	# Toxic Retained	Chi-sq Statistic	Chi-sq p-value	R ² _L	LRM Slope	LRM Intercept	
hym.L3	Silver	228	13	20.90	0.00	0.21	3.59	-0.69	
hym.L3	Zinc	220	5	11.96	0.00	0.25	4.43	-14.06	
hym.L3	Butyltin	68	0	0.00	0.97	#####	0.00	-11.20	Exclude (chi.p ≥ 0.01)
hym.L3	Dibutyltin	71	0	0.00	0.96	#####	0.00	-11.20	Exclude (chi.p ≥ 0.01)
hym.L3	Tributyltin	70	0	0.00	0.97	#####	0.00	-11.20	Exclude (chi.p ≥ 0.01)
hym.L3	Acenaphthene	203	8	38.80	0.00	0.58	2.01	-9.00	
hym.L3	Anthracene	206	10	43.83	0.00	0.55	2.07	-8.83	
hym.L3	Fluorene	202	9	40.12	0.00	0.55	2.04	-8.46	
hym.L3	2-methylnaphthalene	203	8	35.19	0.00	0.52	1.77	-6.95	
hym.L3	Acenaphthylene	207	9	39.19	0.00	0.53	2.47	-8.54	
hym.L3	Naphthalene	166	9	37.02	0.00	0.53	2.05	-8.01	
hym.L3	Phenanthrene	215	10	42.87	0.00	0.53	1.95	-9.72	
hym.L3	Benzo(a)anthracene	213	9	41.43	0.00	0.56	2.49	-11.23	
hym.L3	Benzo(a)pyrene	213	9	42.61	0.00	0.57	2.63	-12.06	
hym.L3	Benzo(b)fluoranthene	212	9	41.21	0.00	0.55	2.64	-12.12	
hym.L3	Benzo(ghi)perylene	214	9	43.79	0.00	0.59	2.78	-12.45	
hym.L3	Benzo(k)fluoranthene	209	9	41.53	0.00	0.56	2.67	-10.93	
hym.L3	Chrysene	210	9	41.39	0.00	0.56	2.58	-11.82	
hym.L3	Dibenzanthracene	216	10	39.83	0.00	0.49	2.42	-8.76	
hym.L3	Fluoranthene	217	10	44.25	0.00	0.55	2.37	-11.66	
hym.L3	Indeno(c,d)pyrene	213	9	43.07	0.00	0.58	2.73	-12.18	
hym.L3	Pyrene	216	9	44.55	0.00	0.60	2.50	-12.58	
hym.L3	Total LPAH	215	10	42.94	0.00	0.53	1.98	-10.33	
hym.L3	Total HPAH	218	9	43.61	0.00	0.58	2.61	-14.70	
hym.L3	Total PAHs	219	9	43.88	0.00	0.58	2.48	-14.38	
hym.L3	Diesel-range hydrocarbons	141	13	46.02	0.00	0.53	3.43	-11.45	
hym.L3	Residual organics	132	11	40.61	0.00	0.54	4.74	-17.17	
hym.L3	Dibenzofuran	203	10	37.13	0.00	0.47	2.02	-6.83	
hym.L3	Hexachlorobenzene	113	3	7.45	0.01	0.27	2.18	-4.40	Questionable reliability (fewer than 5 toxic stations retained)
hym.L3	1,2,3,7,8-Pentachlorodibenzofuran	39	0	0.00	0.97	0.00	0.00	-11.20	Exclude (chi.p ≥ 0.01)
hym.L3	Pentachlorodibenzo-p-dioxin homologs	47	0	0.00	0.97	#####	0.00	-11.20	Exclude (chi.p ≥ 0.01)
hym.L3	TEQ mammal (0.5 detection limit)	58	0	0.00	0.97	#####	0.00	-11.20	Exclude (chi.p ≥ 0.01)
hym.L3	Total dioxins/furans	58	0	0.00	0.97	#####	0.00	-11.20	Exclude (chi.p ≥ 0.01)
hym.L3	Total PCBs	170	3	15.74	0.00	0.52	4.00	-15.13	Questionable reliability (fewer than 5 toxic stations retained)
hym.L3	Aldrin	51	1	4.47	0.03	0.45	2.09	-5.89	Exclude (chi.p ≥ 0.01)
hym.L3	alpha-Hexachlorocyclohexane	50	1	9.79	0.00	1.00	22.63	-16.65	Exclude (only 1 hit retained)

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Table E-1. Results for Individual LRMs

Effect Level	Chemical	Screened Data Set							Comment
		# Samps Retained	# Toxic Retained	Chi-sq Statistic	Chi-sq p-value	R ² _L	LRM Slope	LRM Intercept	
hym.L3	beta-Hexachlorocyclohexane	88	7	19.72	0.00	0.40	4.26	-4.55	
hym.L3	delta-Hexachlorocyclohexane	36	0	0.00	0.98	#####	0.00	-11.20	Exclude (chi.p ≥ 0.01)
hym.L3	Carbazole	156	7	36.28	0.00	0.64	2.62	-9.55	
hym.L3	Methoxychlor	39	1	1.27	0.26	0.14	2.46	-5.11	Exclude (chi.p ≥ 0.01)
hym.L3	cis-Nonachlor	57	4	10.05	0.00	0.35	4.88	-2.48	Questionable reliability (fewer than 5 toxic stations retained)
hym.L3	trans-Nonachlor	74	0	0.00	0.96	#####	0.00	-11.20	Exclude (chi.p ≥ 0.01)
hym.L3	Total chlordane	181	9	28.98	0.00	0.40	2.59	-4.60	
hym.L3	DDD	218	12	52.18	0.00	0.56	2.86	-7.81	
hym.L3	DDE	209	10	43.00	0.00	0.54	3.01	-6.63	
hym.L3	Total.ddt	187	4	18.69	0.00	0.48	1.93	-7.03	Questionable reliability (fewer than 5 toxic stations retained)
hym.L3	Total.ddts	219	11	45.44	0.00	0.52	2.50	-7.99	
hym.L3	Total endosulfans	41	1	3.75	0.05	0.40	2.08	-5.06	Exclude (chi.p ≥ 0.01)
hym.L3	4-Methylphenol	76	4	7.39	0.01	0.24	2.52	-7.08	Questionable reliability (fewer than 5 toxic stations retained)
hym.L3	Pentachlorophenol	46	2	2.53	0.11	0.15	1.94	-5.87	Exclude (chi.p ≥ 0.01)
hym.L3	Phenol	66	1	10.35	0.00	1.00	16.15	-39.44	Exclude (only 1 hit retained)
hym.L3	bis(2-ethylhexyl) phthalate	146	1	2.24	0.13	0.19	1.35	-8.75	Exclude (chi.p ≥ 0.01)
hym.L3	Butylbenzyl phthalate	66	2	2.45	0.12	0.14	1.53	-6.38	Exclude (chi.p ≥ 0.01)
hym.L3	Dibutyl phthalate	94	5	12.07	0.00	0.31	2.45	-6.97	
hym.L2	Ammonia	224	11	21.57	0.00	0.25	6.55	-16.39	
hym.L2	Sulfide	198	10	37.77	0.00	0.48	3.27	-7.31	
hym.L2	Fines (%)	228	15	13.53	0.00	0.12	4.73	-10.86	Questionable reliability (R ² _L < 0.20).
hym.L2	Aluminum	221	8	10.03	0.00	0.15	11.02	-51.73	Questionable reliability (R ² _L < 0.20).
hym.L2	Antimony	154	4	9.54	0.00	0.26	2.48	-3.43	Questionable reliability (fewer than 5 toxic stations retained)
hym.L2	Arsenic	219	6	7.84	0.01	0.14	4.20	-6.62	Questionable reliability (R ² _L < 0.20).
hym.L2	Cadmium	220	9	12.74	0.00	0.17	3.25	-1.82	Questionable reliability (R ² _L < 0.20).
hym.L2	Chromium	222	10	11.08	0.00	0.14	4.40	-10.01	Questionable reliability (R ² _L < 0.20).
hym.L2	Copper	218	5	9.08	0.00	0.19	2.97	-9.37	Questionable reliability (R ² _L < 0.20).
hym.L2	Lead	218	5	8.91	0.00	0.19	2.37	-7.56	Questionable reliability (R ² _L < 0.20).
hym.L2	Mercury	219	10	14.72	0.00	0.18	3.25	0.01	Questionable reliability (R ² _L < 0.20).
hym.L2	Nickel	212	11	8.06	0.00	0.09	4.60	-9.51	Questionable reliability (R ² _L < 0.20).
hym.L2	Selenium	115	6	6.91	0.01	0.15	7.21	2.77	Questionable reliability (R ² _L < 0.20).
hym.L2	Silver	227	14	22.24	0.00	0.21	3.63	-0.58	
hym.L2	Zinc	218	5	11.90	0.00	0.25	4.42	-14.03	
hym.L2	Butyltin	68	0	0.00	0.97	#####	0.00	-11.20	Exclude (chi.p ≥ 0.01)
hym.L2	Dibutyltin	71	0	0.00	0.96	#####	0.00	-11.20	Exclude (chi.p ≥ 0.01)
hym.L2	Tributyltin	70	0	0.00	0.97	#####	0.00	-11.20	Exclude (chi.p ≥ 0.01)

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Table E-1. Results for Individual LRM

Effect Level	Chemical	Screened Data Set							Comment
		# Samps Retained	# Toxic Retained	Chi-sq Statistic	Chi-sq p-value	R ² _L	LRM Slope	LRM Intercept	
hym.L2	Acenaphthene	202	9	41.63	0.00	0.57	1.97	-8.61	
hym.L2	Anthracene	205	11	46.24	0.00	0.54	2.04	-8.53	
hym.L2	Fluorene	201	10	43.09	0.00	0.54	2.03	-8.22	
hym.L2	2-methylnaphthalene	202	9	36.85	0.00	0.50	1.75	-6.64	
hym.L2	Acenaphthylene	206	10	42.50	0.00	0.53	2.46	-8.32	
hym.L2	Naphthalene	165	10	38.84	0.00	0.51	2.05	-7.76	
hym.L2	Phenanthrene	214	11	46.48	0.00	0.54	1.98	-9.65	
hym.L2	Benzo(a)anthracene	212	10	44.87	0.00	0.56	2.48	-11.01	
hym.L2	Benzo(a)pyrene	212	10	46.17	0.00	0.57	2.61	-11.80	
hym.L2	Benzo(b)fluoranthene	211	10	44.76	0.00	0.56	2.64	-11.90	
hym.L2	Benzo(ghi)perylene	213	10	47.44	0.00	0.59	2.76	-12.13	
hym.L2	Benzo(k)fluoranthene	208	10	45.00	0.00	0.56	2.66	-10.69	
hym.L2	Chrysene	209	10	44.80	0.00	0.56	2.57	-11.59	
hym.L2	Dibenzanthracene	215	11	43.45	0.00	0.50	2.45	-8.68	
hym.L2	Fluoranthene	216	11	47.95	0.00	0.55	2.40	-11.58	
hym.L2	Indeno(c,d)pyrene	212	10	46.78	0.00	0.58	2.72	-11.92	
hym.L2	Pyrene	215	10	47.93	0.00	0.59	2.47	-12.23	
hym.L2	Total LPAH	214	11	46.22	0.00	0.53	2.00	-10.23	
hym.L2	Total HPAH	217	10	47.12	0.00	0.58	2.59	-14.39	
hym.L2	Total PAHs	218	10	47.23	0.00	0.58	2.47	-14.08	
hym.L2	Diesel-range hydrocarbons	141	15	47.72	0.00	0.50	3.38	-10.96	
hym.L2	Residual organics	132	13	38.17	0.00	0.45	4.14	-14.85	
hym.L2	Dibenzofuran	202	11	40.10	0.00	0.47	2.05	-6.74	
hym.L2	Hexachlorobenzene	112	3	7.45	0.01	0.27	2.17	-4.39	Questionable reliability (fewer than 5 toxic stations retained)
hym.L2	1,2,3,7,8-Pentachlorodibenzofuran	39	0	0.00	0.97	#####	0.00	-11.20	Exclude (chi.p ≥ 0.01)
hym.L2	Pentachlorodibenzo-p-dioxin homologs	47	0	0.00	0.97	#####	0.00	-11.20	Exclude (chi.p ≥ 0.01)
hym.L2	TEQ mammal (0.5 detection limit)	58	0	0.00	0.97	#####	0.00	-11.20	Exclude (chi.p ≥ 0.01)
hym.L2	Total dioxins/furans	58	0	0.00	0.97	#####	0.00	-11.20	Exclude (chi.p ≥ 0.01)
hym.L2	Total PCBs	169	3	15.71	0.00	0.52	4.00	-15.11	Questionable reliability (fewer than 5 toxic stations retained)
hym.L2	Aldrin	50	1	4.43	0.04	0.45	2.08	-5.88	Exclude (chi.p ≥ 0.01)
hym.L2	alpha-Hexachlorocyclohexane	50	2	5.41	0.02	0.32	3.17	-2.80	Exclude (chi.p ≥ 0.01)
hym.L2	beta-Hexachlorocyclohexane	87	8	19.56	0.00	0.37	3.86	-4.05	
hym.L2	delta-Hexachlorocyclohexane	36	0	0.00	0.98	#####	0.00	-11.20	Exclude (chi.p ≥ 0.01)
hym.L2	Carbazole	156	8	38.67	0.00	0.61	2.57	-9.07	
hym.L2	Methoxychlor	39	1	1.27	0.26	0.14	2.46	-5.11	Exclude (chi.p ≥ 0.01)
hym.L2	cis-Nonachlor	57	4	10.05	0.00	0.35	4.88	-2.48	Questionable reliability (fewer than 5 toxic stations retained)

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Table E-1. Results for Individual LRM

Effect Level	Chemical	Screened Data Set							Comment
		# Samps Retained	# Toxic Retained	Chi-sq Statistic	Chi-sq p-value	R ² _L	LRM Slope	LRM Intercept	
hym.L2	trans-Nonachlor	74	0	0.00	0.96	#####	0.00	-11.20	Exclude (chi.p ≥ 0.01)
hym.L2	Total chlordane	180	9	29.01	0.00	0.41	2.58	-4.58	
hym.L2	DDD	216	12	52.00	0.00	0.56	2.85	-7.79	
hym.L2	DDE	208	10	42.93	0.00	0.54	3.00	-6.62	
hym.L2	DDT	186	4	18.67	0.00	0.48	1.93	-7.01	Questionable reliability (fewer than 5 toxic stations retained)
hym.L2	Total DDTs	217	11	45.28	0.00	0.52	2.49	-7.96	
hym.L2	Total endosulfans	41	1	3.75	0.05	0.40	2.08	-5.06	Exclude (chi.p ≥ 0.01)
hym.L2	4-Methylphenol	76	5	8.25	0.00	0.22	2.41	-6.59	
hym.L2	Pentachlorophenol	45	2	2.52	0.11	0.15	1.92	-5.81	Exclude (chi.p ≥ 0.01)
hym.L2	Phenol	66	1	10.35	0.00	1.00	16.15	-39.44	Exclude (only 1 hit retained)
hym.L2	bis(2-ethylhexyl) phthalate	145	1	2.23	0.13	0.19	1.35	-8.73	Exclude (chi.p ≥ 0.01)
hym.L2	Butylbenzyl phthalate	66	2	2.45	0.12	0.14	1.53	-6.38	Exclude (chi.p ≥ 0.01)
hym.L2	Dibutyl phthalate	94	5	12.07	0.00	0.31	2.45	-6.97	
hym.L1	Ammonia	213	13	21.06	0.00	0.22	5.76	-14.44	
hym.L1	Sulfide	189	14	47.67	0.00	0.48	3.69	-7.21	
hym.L1	Fines (%)	222	22	19.93	0.00	0.14	4.72	-10.37	Questionable reliability (R ² _L < 0.20).
hym.L1	Aluminum	215	15	13.19	0.00	0.12	8.72	-40.79	Questionable reliability (R ² _L < 0.20).
hym.L1	Antimony	144	5	9.56	0.00	0.22	2.25	-3.06	
hym.L1	Arsenic	208	8	11.34	0.00	0.17	4.50	-6.52	Questionable reliability (R ² _L < 0.20).
hym.L1	Cadmium	209	10	14.73	0.00	0.18	3.40	-1.63	Questionable reliability (R ² _L < 0.20).
hym.L1	Chromium	211	12	14.16	0.00	0.15	4.66	-10.19	Questionable reliability (R ² _L < 0.20).
hym.L1	Copper	207	7	9.87	0.00	0.16	2.67	-8.32	Questionable reliability (R ² _L < 0.20).
hym.L1	Lead	205	5	9.82	0.00	0.21	2.49	-7.74	
hym.L1	Mercury	210	14	20.14	0.00	0.20	3.42	0.58	Questionable reliability (R ² _L < 0.20).
hym.L1	Nickel	203	14	9.30	0.00	0.09	4.69	-9.31	Questionable reliability (R ² _L < 0.20).
hym.L1	Selenium	107	7	8.58	0.00	0.17	7.76	3.38	Questionable reliability (R ² _L < 0.20).
hym.L1	Silver	214	14	22.93	0.00	0.22	3.73	-0.49	
hym.L1	Zinc	206	6	14.54	0.00	0.27	4.61	-14.28	
hym.L1	Butyltin	66	0	0.00	0.97	#####	0.00	-11.20	Exclude (chi.p ≥ 0.01)
hym.L1	Dibutyltin	66	0	0.00	0.97	#####	0.00	-11.20	Exclude (chi.p ≥ 0.01)
hym.L1	Tributyltin	66	0	0.00	0.97	#####	0.00	-11.20	Exclude (chi.p ≥ 0.01)
hym.L1	Acenaphthene	192	10	46.07	0.00	0.59	2.12	-8.76	
hym.L1	Anthracene	195	13	53.38	0.00	0.56	2.25	-8.71	
hym.L1	Fluorene	192	11	48.35	0.00	0.57	2.23	-8.53	
hym.L1	2-methylnaphthalene	190	9	37.94	0.00	0.52	1.87	-6.78	
hym.L1	Acenaphthylene	194	10	43.46	0.00	0.55	2.59	-8.53	

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Table E-1. Results for Individual LRM

Effect Level	Chemical	Screened Data Set							Comment
		# Samps Retained	# Toxic Retained	Chi-sq Statistic	Chi-sq p-value	R ² _L	LRM Slope	LRM Intercept	
hym.L1	Naphthalene	157	11	41.35	0.00	0.52	2.24	-7.93	
hym.L1	Phenanthrene	202	12	51.19	0.00	0.56	2.17	-10.07	
hym.L1	Benzo(a)anthracene	201	12	47.39	0.00	0.52	2.40	-10.18	
hym.L1	Benzo(a)pyrene	200	10	49.24	0.00	0.62	3.02	-13.26	
hym.L1	Benzo(b)fluoranthene	200	11	47.12	0.00	0.55	2.70	-11.80	
hym.L1	Benzo(ghi)perylene	201	11	49.07	0.00	0.58	2.75	-11.72	
hym.L1	Benzo(k)fluoranthene	199	12	47.22	0.00	0.52	2.54	-9.74	
hym.L1	Chrysene	201	13	47.50	0.00	0.49	2.36	-10.12	
hym.L1	Dibenzanthracene	205	12	47.71	0.00	0.52	2.65	-8.94	
hym.L1	Fluoranthene	205	13	51.34	0.00	0.53	2.38	-11.03	
hym.L1	Indeno(c,d)pyrene	202	12	47.85	0.00	0.53	2.49	-10.52	
hym.L1	Pyrene	205	12	51.03	0.00	0.56	2.38	-11.28	
hym.L1	Total LPAH	202	12	50.99	0.00	0.56	2.20	-10.78	
hym.L1	Total HPAH	207	13	49.25	0.00	0.51	2.32	-12.36	
hym.L1	Total PAHs	207	12	50.54	0.00	0.55	2.42	-13.29	
hym.L1	Diesel-range hydrocarbons	139	17	51.76	0.00	0.50	3.78	-11.65	
hym.L1	Residual organics	128	14	40.44	0.00	0.46	4.62	-16.09	
hym.L1	Dibenzofuran	193	12	45.30	0.00	0.50	2.26	-6.96	
hym.L1	Hexachlorobenzene	107	3	7.28	0.01	0.27	2.14	-4.34	Questionable reliability (fewer than 5 toxic stations retained)
hym.L1	1,2,3,7,8-Pentachlorodibenzofuran	39	0	0.00	0.97	#####	0.00	-11.20	Exclude (chi.p ≥ 0.01)
hym.L1	Pentachlorodibenzo-p-dioxin homologs	47	0	0.00	0.97	#####	0.00	-11.20	Exclude (chi.p ≥ 0.01)
hym.L1	TEQ mammal (0.5 detection limit)	58	0	0.00	0.97	#####	0.00	-11.20	Exclude (chi.p ≥ 0.01)
hym.L1	Total dioxins/furans	58	0	0.00	0.97	#####	0.00	-11.20	Exclude (chi.p ≥ 0.01)
hym.L1	Total PCBs	164	4	19.27	0.00	0.51	4.07	-14.88	Questionable reliability (fewer than 5 toxic stations retained)
hym.L1	Aldrin	48	1	4.36	0.04	0.45	2.08	-5.86	Exclude (chi.p ≥ 0.01)
hym.L1	alpha-Hexachlorocyclohexane	49	2	5.36	0.02	0.32	3.14	-2.79	Exclude (chi.p ≥ 0.01)
hym.L1	beta-Hexachlorocyclohexane	83	8	19.47	0.00	0.37	3.86	-3.98	
hym.L1	delta-Hexachlorocyclohexane	33	0	0.00	0.98	#####	0.00	-11.20	Exclude (chi.p ≥ 0.01)
hym.L1	Carbazole	153	13	42.11	0.00	0.47	2.40	-7.33	
hym.L1	Methoxychlor	37	1	1.20	0.27	0.13	2.37	-5.02	Exclude (chi.p ≥ 0.01)
hym.L1	cis-Nonachlor	56	5	11.22	0.00	0.33	4.81	-2.13	
hym.L1	trans-Nonachlor	72	1	0.75	0.39	0.07	1.96	-3.72	Exclude (chi.p ≥ 0.01)
hym.L1	Total chlordane	171	8	27.54	0.00	0.43	2.60	-4.76	
hym.L1	DDD	205	11	52.17	0.00	0.61	3.18	-8.73	
hym.L1	DDE	199	10	42.22	0.00	0.53	2.97	-6.54	
hym.L1	DDT	178	4	18.36	0.00	0.48	1.91	-6.97	Questionable reliability (fewer than 5 toxic stations retained)

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Table E-1. Results for Individual LRM

Effect Level	Chemical	Screened Data Set							Comment
		# Samps Retained	# Toxic Retained	Chi-sq Statistic	Chi-sq p-value	R ² _L	LRM Slope	LRM Intercept	
hym.L1	Total DDTs	207	11	44.40	0.00	0.52	2.47	-7.88	
hym.L1	Total endosulfans	37	1	3.70	0.05	0.40	2.02	-4.87	Exclude (chi.p ≥ 0.01)
hym.L1	4-Methylphenol	76	5	8.25	0.00	0.22	2.41	-6.59	
hym.L1	Pentachlorophenol	44	2	2.44	0.12	0.15	1.90	-5.78	Exclude (chi.p ≥ 0.01)
hym.L1	Phenol	64	1	10.29	0.00	1.00	16.26	-39.71	Exclude (only 1 hit retained)
hym.L1	bis(2-ethylhexyl) phthalate	143	1	2.25	0.13	0.19	1.34	-8.70	Exclude (chi.p ≥ 0.01)
hym.L1	Butylbenzyl phthalate	66	2	2.45	0.12	0.14	1.53	-6.38	Exclude (chi.p ≥ 0.01)
hym.L1	Dibutyl phthalate	92	6	12.71	0.00	0.29	2.34	-6.50	
Hyalella pooled									
hyp.L3	Ammonia	205	36	39.14	0.00	0.21	4.77	-10.98	
hyp.L3	Sulfide	158	13	34.76	0.00	0.39	2.62	-5.65	
hyp.L3	Fines (%)	225	56	57.69	0.00	0.23	5.85	-11.16	
hyp.L3	Aluminum	218	49	48.93	0.00	0.21	11.24	-50.35	
hyp.L3	Antimony	129	10	25.83	0.00	0.37	3.17	-2.27	
hyp.L3	Arsenic	194	25	28.05	0.00	0.19	4.94	-5.38	Questionable reliability (R ² _L < 0.20).
hyp.L3	Cadmium	194	26	30.41	0.00	0.20	3.66	-0.24	Questionable reliability (R ² _L < 0.20).
hyp.L3	Chromium	206	38	21.21	0.00	0.11	4.07	-7.76	Questionable reliability (R ² _L < 0.20).
hyp.L3	Copper	186	17	40.69	0.00	0.36	4.13	-10.19	
hyp.L3	Lead	186	17	29.86	0.00	0.26	3.08	-7.18	
hyp.L3	Mercury	189	24	37.06	0.00	0.26	4.09	1.91	
hyp.L3	Nickel	198	41	28.87	0.00	0.14	7.69	-12.25	Questionable reliability (R ² _L < 0.20).
hyp.L3	Selenium	109	27	29.59	0.00	0.24	8.36	5.65	
hyp.L3	Silver	215	46	48.88	0.00	0.22	3.90	1.29	
hyp.L3	Zinc	185	16	34.10	0.00	0.31	5.36	-14.72	
hyp.L3	Butyltin	50	4	10.96	0.00	0.39	3.30	-6.84	Questionable reliability (fewer than 5 toxic stations retained)
hyp.L3	Dibutyltin	55	6	14.41	0.00	0.38	3.01	-7.54	
hyp.L3	Tributyltin	54	6	12.66	0.00	0.34	2.28	-7.13	
hyp.L3	Acenaphthene	161	10	40.22	0.00	0.54	1.83	-7.82	
hyp.L3	Anthracene	163	11	43.70	0.00	0.54	2.04	-8.43	
hyp.L3	Fluorene	158	9	39.03	0.00	0.57	2.10	-8.57	
hyp.L3	2-methylnaphthalene	158	7	34.45	0.00	0.60	1.90	-7.47	
hyp.L3	Acenaphthylene	167	13	43.17	0.00	0.47	2.22	-7.14	
hyp.L3	Naphthalene	132	12	45.32	0.00	0.56	2.40	-8.29	
hyp.L3	Phenanthrene	170	10	42.74	0.00	0.56	2.05	-10.02	
hyp.L3	Benzo(a)anthracene	173	13	44.39	0.00	0.48	2.15	-9.19	
hyp.L3	Benzo(a)pyrene	172	13	46.82	0.00	0.51	2.30	-10.02	

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Table E-1. Results for Individual LRM

Effect Level	Chemical	Screened Data Set							Comment
		# Samps Retained	# Toxic Retained	Chi-sq Statistic	Chi-sq p-value	R ² _L	LRM Slope	LRM Intercept	
hyp.L3	Benzo(b)fluoranthene	171	13	44.15	0.00	0.48	2.28	-9.96	
hyp.L3	Benzo(ghi)perylene	173	13	48.50	0.00	0.53	2.43	-10.29	
hyp.L3	Benzo(k)fluoranthene	169	13	44.21	0.00	0.48	2.29	-8.87	
hyp.L3	Chrysene	170	13	43.89	0.00	0.48	2.21	-9.64	
hyp.L3	Dibenzanthracene	173	13	43.53	0.00	0.47	2.33	-7.97	
hyp.L3	Fluoranthene	175	14	46.67	0.00	0.48	2.09	-9.77	
hyp.L3	Indeno(c,d)pyrene	172	13	47.71	0.00	0.52	2.41	-10.15	
hyp.L3	Pyrene	174	13	46.87	0.00	0.51	2.10	-10.03	
hyp.L3	Total LPAH	171	11	44.72	0.00	0.55	2.03	-10.28	
hyp.L3	Total HPAH	176	13	46.59	0.00	0.50	2.23	-12.01	
hyp.L3	Total PAHs	177	13	47.05	0.00	0.51	2.15	-11.91	
hyp.L3	Diesel-range hydrocarbons	120	20	45.06	0.00	0.42	3.05	-9.35	
hyp.L3	Residual organics	109	17	38.81	0.00	0.41	4.08	-14.01	
hyp.L3	Dibenzofuran	161	11	35.92	0.00	0.45	1.93	-6.36	
hyp.L3	Hexachlorobenzene	94	5	12.28	0.00	0.31	2.60	-3.86	
hyp.L3	1,2,3,7,8-Pentachlorodibenzofuran	35	0	0.00	0.98	#####	0.00	-11.20	Exclude (chi.p ≥ 0.01)
hyp.L3	Pentachlorodibenzo-p-dioxin homologs	41	1	8.04	0.00	0.86	86.28	-77.02	Exclude (only 1 hit retained)
hyp.L3	TEQ mammal (0.5 detection limit)	52	2	6.87	0.01	0.41	2.39	-4.87	Questionable reliability (fewer than 5 toxic stations retained)
hyp.L3	Total dioxins/furans	52	2	3.93	0.05	0.23	1.80	-7.93	Exclude (chi.p ≥ 0.01)
hyp.L3	Total PCBs	139	8	17.62	0.00	0.29	2.10	-7.87	
hyp.L3	Aldrin	44	2	6.22	0.01	0.38	1.86	-4.47	Exclude (chi.p ≥ 0.01)
hyp.L3	alpha-Hexachlorocyclohexane	41	2	14.01	0.00	0.88	67.62	-31.53	Questionable reliability (fewer than 5 toxic stations retained)
hyp.L3	beta-Hexachlorocyclohexane	80	13	22.41	0.00	0.32	3.38	-2.91	
hyp.L3	delta-Hexachlorocyclohexane	31	2	4.75	0.03	0.32	7.05	-0.61	Exclude (chi.p ≥ 0.01)
hyp.L3	Carbazole	122	8	35.01	0.00	0.59	2.47	-8.69	
hyp.L3	Methoxychlor	37	3	7.35	0.01	0.35	4.84	-6.00	Questionable reliability (fewer than 5 toxic stations retained)
hyp.L3	cis-Nonachlor	50	6	12.32	0.00	0.34	5.45	-1.91	
hyp.L3	trans-Nonachlor	65	2	0.94	0.33	0.05	1.53	-2.99	Exclude (chi.p ≥ 0.01)
hyp.L3	Total chlordane	142	10	29.51	0.00	0.41	2.66	-4.38	
hyp.L3	DDD	178	15	53.89	0.00	0.52	2.63	-6.78	
hyp.L3	DDE	168	12	40.91	0.00	0.47	2.68	-5.69	
hyp.L3	DDT	147	5	19.23	0.00	0.44	1.77	-6.19	
hyp.L3	Total DDTs	177	12	45.48	0.00	0.52	2.47	-7.65	
hyp.L3	Total endosulfans	37	1	3.63	0.06	0.40	2.00	-4.89	Exclude (chi.p ≥ 0.01)
hyp.L3	4-Methylphenol	56	5	7.77	0.01	0.23	2.41	-6.43	
hyp.L3	Pentachlorophenol	42	5	8.17	0.00	0.27	2.55	-5.68	

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Effect Level	Chemical	Screened Data Set							Comment
		# Samps Retained	# Toxic Retained	Chi-sq Statistic	Chi-sq p-value	R ² _L	LRM Slope	LRM Intercept	
hyp.L3	Phenol	53	9	14.60	0.00	0.30	3.68	-6.45	
hyp.L3	bis(2-ethylhexyl) phthalate	117	1	3.52	0.06	0.31	1.61	-9.56	Exclude (chi.p ≥ 0.01)
hyp.L3	Butylbenzyl phthalate	52	5	10.79	0.00	0.33	2.68	-7.88	
hyp.L3	Dibutyl phthalate	72	9	18.19	0.00	0.34	2.64	-6.31	
hyp.L2	Ammonia	203	86	73.34	0.00	0.27	5.30	-10.47	
hyp.L2	Sulfide	133	36	63.64	0.00	0.41	3.19	-4.46	
hyp.L2	Fines (%)	218	101	110.69	0.00	0.37	7.06	-11.98	
hyp.L2	Aluminum	209	92	79.64	0.00	0.28	12.72	-55.57	
hyp.L2	Antimony	102	19	43.56	0.00	0.44	4.24	-1.04	
hyp.L2	Arsenic	169	52	43.03	0.00	0.21	5.81	-4.71	
hyp.L2	Cadmium	175	59	60.38	0.00	0.27	5.01	1.78	
hyp.L2	Chromium	183	66	36.73	0.00	0.15	5.44	-8.88	Questionable reliability (R ² _L < 0.20).
hyp.L2	Copper	156	39	56.12	0.00	0.32	3.88	-8.06	
hyp.L2	Lead	149	32	52.50	0.00	0.34	4.12	-7.70	
hyp.L2	Mercury	162	49	60.25	0.00	0.30	4.72	3.82	
hyp.L2	Nickel	180	72	41.53	0.00	0.17	9.81	-14.20	Questionable reliability (R ² _L < 0.20).
hyp.L2	Selenium	99	49	54.19	0.00	0.39	11.65	9.75	
hyp.L2	Silver	197	80	76.76	0.00	0.29	5.05	3.18	
hyp.L2	Zinc	158	41	56.70	0.00	0.31	5.85	-14.17	
hyp.L2	Butyltin	36	8	9.78	0.00	0.26	2.19	-3.91	
hyp.L2	Dibutyltin	42	12	18.69	0.00	0.37	3.06	-6.24	
hyp.L2	Tributyltin	41	12	23.89	0.00	0.48	4.06	-9.95	
hyp.L2	Acenaphthene	114	11	39.02	0.00	0.54	1.83	-7.51	
hyp.L2	Anthracene	116	13	41.95	0.00	0.52	1.93	-7.60	
hyp.L2	Fluorene	112	11	38.54	0.00	0.54	1.99	-7.72	
hyp.L2	2-methylnaphthalene	108	6	32.21	0.00	0.69	2.17	-8.59	
hyp.L2	Acenaphthylene	118	14	41.55	0.00	0.48	2.20	-6.76	
hyp.L2	Naphthalene	95	14	43.91	0.00	0.55	2.44	-7.87	
hyp.L2	Phenanthrene	120	11	42.33	0.00	0.58	2.11	-9.96	
hyp.L2	Benzo(a)anthracene	121	13	42.57	0.00	0.52	2.26	-9.44	
hyp.L2	Benzo(a)pyrene	122	15	46.15	0.00	0.51	2.29	-9.57	
hyp.L2	Benzo(b)fluoranthene	120	14	42.88	0.00	0.50	2.31	-9.78	
hyp.L2	Benzo(ghi)perylene	123	15	48.30	0.00	0.53	2.43	-9.87	
hyp.L2	Benzo(k)fluoranthene	119	14	42.88	0.00	0.50	2.32	-8.68	
hyp.L2	Chrysene	118	13	42.05	0.00	0.51	2.32	-9.90	
hyp.L2	Dibenzanthracene	124	15	43.26	0.00	0.47	2.31	-7.51	

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Table E-1. Results for Individual LRM

Effect Level	Chemical	Screened Data Set							Comment
		# Samps Retained	# Toxic Retained	Chi-sq Statistic	Chi-sq p-value	R ² _L	LRM Slope	LRM Intercept	
hyp.L2	Fluoranthene	121	12	43.71	0.00	0.56	2.39	-11.16	
hyp.L2	Indeno(c,d)pyrene	122	15	47.28	0.00	0.52	2.40	-9.71	
hyp.L2	Pyrene	121	12	44.47	0.00	0.57	2.32	-11.00	
hyp.L2	Total LPAH	121	12	43.28	0.00	0.55	2.05	-10.07	
hyp.L2	Total HPAH	125	14	45.54	0.00	0.52	2.27	-11.90	
hyp.L2	Total PAHs	125	13	45.14	0.00	0.54	2.26	-12.32	
hyp.L2	Diesel-range hydrocarbons	88	25	43.30	0.00	0.41	3.13	-8.79	
hyp.L2	Residual organics	79	24	39.24	0.00	0.40	4.38	-13.92	
hyp.L2	Dibenzofuran	114	13	34.46	0.00	0.43	1.84	-5.69	
hyp.L2	Hexachlorobenzene	67	4	12.14	0.00	0.40	2.71	-3.88	Questionable reliability (fewer than 5 toxic stations retained)
hyp.L2	1,2,3,7,8-Pentachlorodibenzofuran	28	1	1.72	0.19	0.20	1.30	-3.73	Exclude (chi.p ≥ 0.01)
hyp.L2	Pentachlorodibenzo-p-dioxin homologs	37	5	13.97	0.00	0.48	6.38	-4.81	
hyp.L2	TEQ mammal (0.5 detection limit)	44	6	13.58	0.00	0.39	2.31	-2.93	
hyp.L2	Total dioxins/furans	48	10	20.31	0.00	0.41	3.28	-9.81	
hyp.L2	Total PCBs	114	25	48.39	0.00	0.40	2.67	-7.45	
hyp.L2	Aldrin	36	4	11.30	0.00	0.45	2.17	-3.49	Questionable reliability (fewer than 5 toxic stations retained)
hyp.L2	alpha-Hexachlorocyclohexane	33	9	16.57	0.00	0.43	4.39	-0.07	
hyp.L2	beta-Hexachlorocyclohexane	73	28	44.00	0.00	0.45	4.93	-1.77	
hyp.L2	delta-Hexachlorocyclohexane	26	7	7.26	0.01	0.24	5.34	1.08	
hyp.L2	Carbazole	93	10	37.84	0.00	0.60	2.64	-8.48	
hyp.L2	Methoxychlor	34	9	16.52	0.00	0.42	4.55	-3.72	
hyp.L2	cis-Nonachlor	45	14	20.78	0.00	0.37	5.63	-0.30	
hyp.L2	trans-Nonachlor	53	9	9.78	0.00	0.20	2.95	-0.98	
hyp.L2	Total chlordane	103	12	41.60	0.00	0.56	3.73	-4.67	
hyp.L2	DDD	134	21	60.10	0.00	0.52	2.60	-5.85	
hyp.L2	DDE	127	18	50.25	0.00	0.48	2.85	-4.96	
hyp.L2	DDT	104	6	26.25	0.00	0.57	2.23	-6.85	
hyp.L2	Total DDTs	131	16	53.73	0.00	0.55	2.65	-7.36	
hyp.L2	Total endosulfans	31	2	6.11	0.01	0.41	1.96	-3.74	Exclude (chi.p ≥ 0.01)
hyp.L2	4-Methylphenol	44	14	18.36	0.00	0.33	3.12	-5.85	
hyp.L2	Pentachlorophenol	33	7	10.04	0.00	0.29	2.38	-4.61	
hyp.L2	Phenol	47	18	19.76	0.00	0.32	4.84	-6.45	
hyp.L2	bis(2-ethylhexyl) phthalate	78	2	6.18	0.01	0.33	1.59	-8.34	Exclude (chi.p ≥ 0.01)
hyp.L2	Butylbenzyl phthalate	40	10	14.75	0.00	0.33	2.71	-6.66	
hyp.L2	Dibutyl phthalate	64	17	30.35	0.00	0.41	3.42	-6.42	
hyp.L1	Ammonia	187	128	104.78	0.00	0.45	8.53	-14.95	

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Table E-1. Results for Individual LRMs

Effect Level	Chemical	Screened Data Set							Comment
		# Samps Retained	# Toxic Retained	Chi-sq Statistic	Chi-sq p-value	R ² _L	LRM Slope	LRM Intercept	
hyp.L1	Sulfide	118	73	84.00	0.00	0.54	5.36	-4.26	
hyp.L1	Fines (%)	196	137	131.26	0.00	0.55	8.43	-12.49	
hyp.L1	Aluminum	193	134	79.31	0.00	0.33	13.66	-58.12	
hyp.L1	Antimony	79	37	46.72	0.00	0.43	5.38	1.07	
hyp.L1	Arsenic	149	90	53.55	0.00	0.27	9.27	-5.39	
hyp.L1	Cadmium	147	88	56.69	0.00	0.29	5.75	3.51	
hyp.L1	Chromium	134	75	38.61	0.00	0.21	6.69	-9.97	
hyp.L1	Copper	159	100	75.22	0.00	0.36	6.54	-10.16	
hyp.L1	Lead	129	70	63.68	0.00	0.36	5.60	-8.04	
hyp.L1	Mercury	146	91	71.17	0.00	0.37	6.15	7.08	
hyp.L1	Nickel	163	112	47.45	0.00	0.23	14.50	-19.34	
hyp.L1	Selenium	85	67	35.34	0.00	0.40	11.91	11.94	
hyp.L1	Silver	168	109	89.45	0.00	0.41	7.36	6.06	
hyp.L1	Zinc	126	67	54.74	0.00	0.31	6.68	-14.54	
hyp.L1	Butyltin	26	13	12.44	0.00	0.35	2.73	-3.00	
hyp.L1	Dibutyltin	32	19	18.78	0.00	0.43	3.67	-5.53	
hyp.L1	Tributyltin	30	17	21.73	0.00	0.53	4.98	-10.41	
hyp.L1	Acenaphthene	72	21	55.22	0.00	0.64	2.44	-7.35	
hyp.L1	Anthracene	72	21	53.44	0.00	0.61	2.58	-7.97	
hyp.L1	Fluorene	73	23	55.68	0.00	0.61	2.58	-7.13	
hyp.L1	2-methylnaphthalene	79	28	60.22	0.00	0.59	3.34	-6.73	
hyp.L1	Acenaphthylene	71	20	45.98	0.00	0.54	2.61	-6.44	
hyp.L1	Naphthalene	67	29	49.41	0.00	0.54	3.47	-7.95	
hyp.L1	Phenanthrene	77	23	57.52	0.00	0.61	2.60	-9.48	
hyp.L1	Benzo(a)anthracene	75	21	52.20	0.00	0.59	2.68	-9.27	
hyp.L1	Benzo(a)pyrene	71	18	52.66	0.00	0.65	3.15	-11.75	
hyp.L1	Benzo(b)fluoranthene	74	21	51.41	0.00	0.58	2.82	-10.09	
hyp.L1	Benzo(ghi)perylene	72	19	53.92	0.00	0.65	3.17	-11.38	
hyp.L1	Benzo(k)fluoranthene	75	22	51.57	0.00	0.57	2.77	-8.45	
hyp.L1	Chrysene	75	22	51.98	0.00	0.57	2.73	-9.56	
hyp.L1	Dibenzanthracene	78	24	53.65	0.00	0.56	2.92	-7.50	
hyp.L1	Fluoranthene	77	23	54.80	0.00	0.58	2.65	-10.08	
hyp.L1	Indeno(c,d)pyrene	72	19	53.25	0.00	0.64	3.11	-11.07	
hyp.L1	Pyrene	74	20	52.89	0.00	0.61	2.62	-10.39	
hyp.L1	Total LPAH	76	22	58.88	0.00	0.64	2.79	-11.07	
hyp.L1	Total HPAH	76	21	53.41	0.00	0.60	2.72	-12.44	

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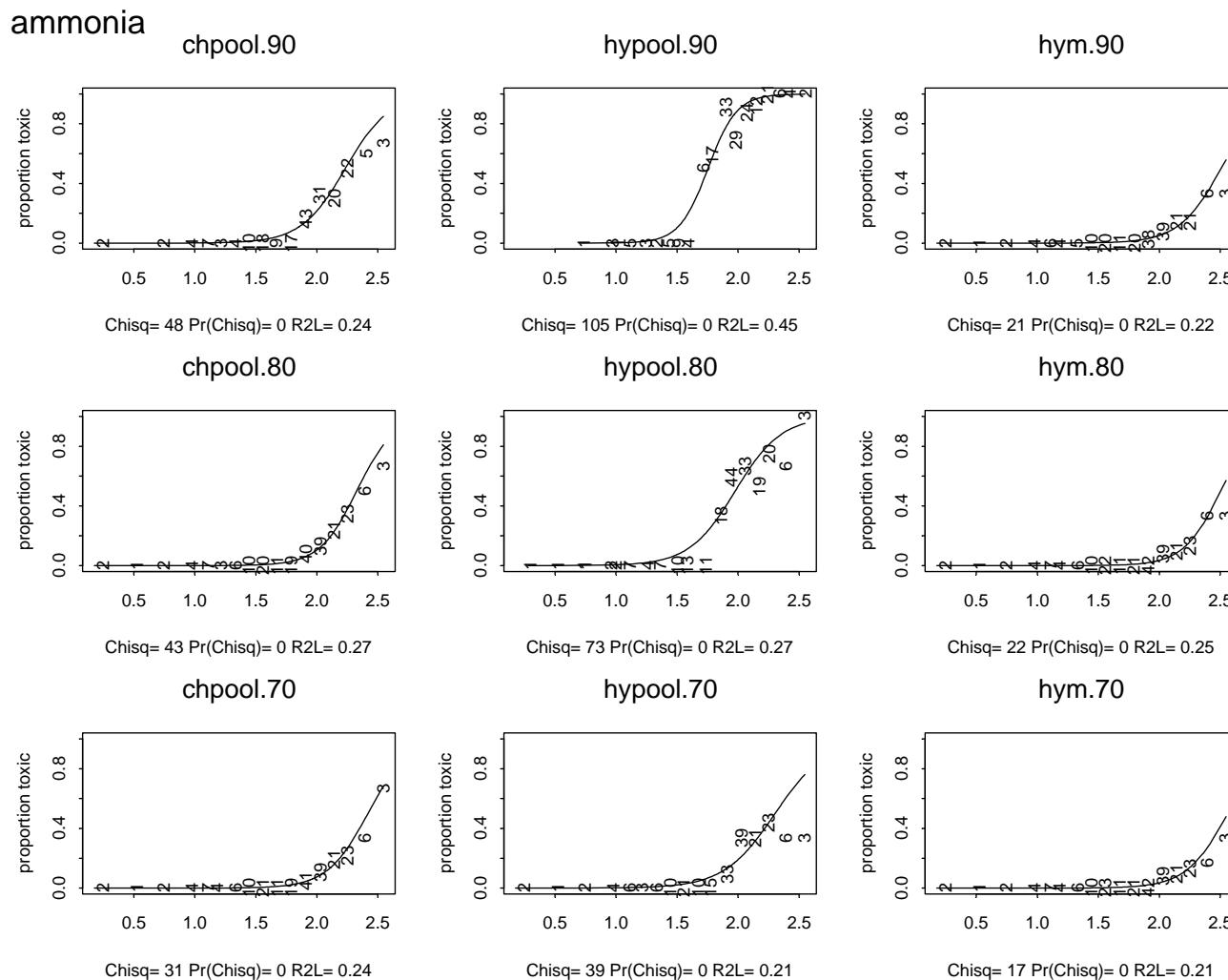
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Table E-1. Results for Individual LRM

Effect Level	Chemical	Screened Data Set						Comment
		# Samps Retained	# Toxic Retained	Chi-sq Statistic	Chi-sq p-value	R ² _L	LRM Slope	
hyp.L1	Total PAHs	79	23	56.82	0.00	0.60	2.74	-12.64
hyp.L1	Diesel-range hydrocarbons	76	43	46.99	0.00	0.45	4.02	-9.20
hyp.L1	Residual organics	78	51	36.61	0.00	0.36	4.82	-12.95
hyp.L1	Dibenzofuran	80	29	56.55	0.00	0.54	2.73	-5.29
hyp.L1	Hexachlorobenzene	67	33	36.92	0.00	0.40	4.24	-0.88
hyp.L1	1,2,3,7,8-Pentachlorodibenzofuran	19	2	2.94	0.09	0.23	1.34	-2.70
hyp.L1	Pentachlorodibenzo-p-dioxin homologs	27	8	20.79	0.00	0.63	7.80	-4.04
hyp.L1	TEQ mammal (0.5 detection limit)	28	6	12.40	0.00	0.43	2.32	-2.47
hyp.L1	Total dioxins/furans	34	12	19.14	0.00	0.43	3.35	-9.17
hyp.L1	Total PCBs	74	29	44.05	0.00	0.44	3.01	-7.58
hyp.L1	Aldrin	29	11	17.67	0.00	0.46	3.36	-1.48
hyp.L1	alpha-Hexachlorocyclohexane	23	10	17.06	0.00	0.54	7.36	1.21
hyp.L1	beta-Hexachlorocyclohexane	61	35	40.54	0.00	0.49	5.84	-1.00
hyp.L1	delta-Hexachlorocyclohexane	24	14	9.68	0.00	0.30	7.30	3.66
hyp.L1	Carbazole	69	27	44.27	0.00	0.48	2.67	-5.71
hyp.L1	Methoxychlor	26	14	17.88	0.00	0.50	4.33	-1.56
hyp.L1	cis-Nonachlor	35	19	20.04	0.00	0.42	5.94	0.98
hyp.L1	trans-Nonachlor	41	19	17.49	0.00	0.31	4.53	1.16
hyp.L1	Total chlordane	89	47	54.50	0.00	0.44	4.79	-1.93
hyp.L1	DDD	90	33	67.49	0.00	0.57	3.20	-5.08
hyp.L1	DDE	78	24	50.72	0.00	0.53	3.12	-3.97
hyp.L1	DDT	70	23	45.64	0.00	0.51	2.75	-4.36
hyp.L1	Total DDTs	93	35	65.76	0.00	0.53	3.10	-5.78
hyp.L1	Total endosulfans	15	2	4.70	0.03	0.40	1.62	-2.70
hyp.L1	4-Methylphenol	28	13	15.31	0.00	0.40	3.39	-5.89
hyp.L1	Pentachlorophenol	42	30	25.08	0.00	0.50	5.87	-5.18
hyp.L1	Phenol	27	16	14.89	0.00	0.41	5.57	-6.73
hyp.L1	bis(2-ethylhexyl) phthalate	52	16	34.87	0.00	0.54	3.34	-10.87
hyp.L1	Butylbenzyl phthalate	27	13	13.11	0.00	0.35	3.62	-7.76
hyp.L1	Dibutyl phthalate	48	20	31.31	0.00	0.48	4.22	-7.03

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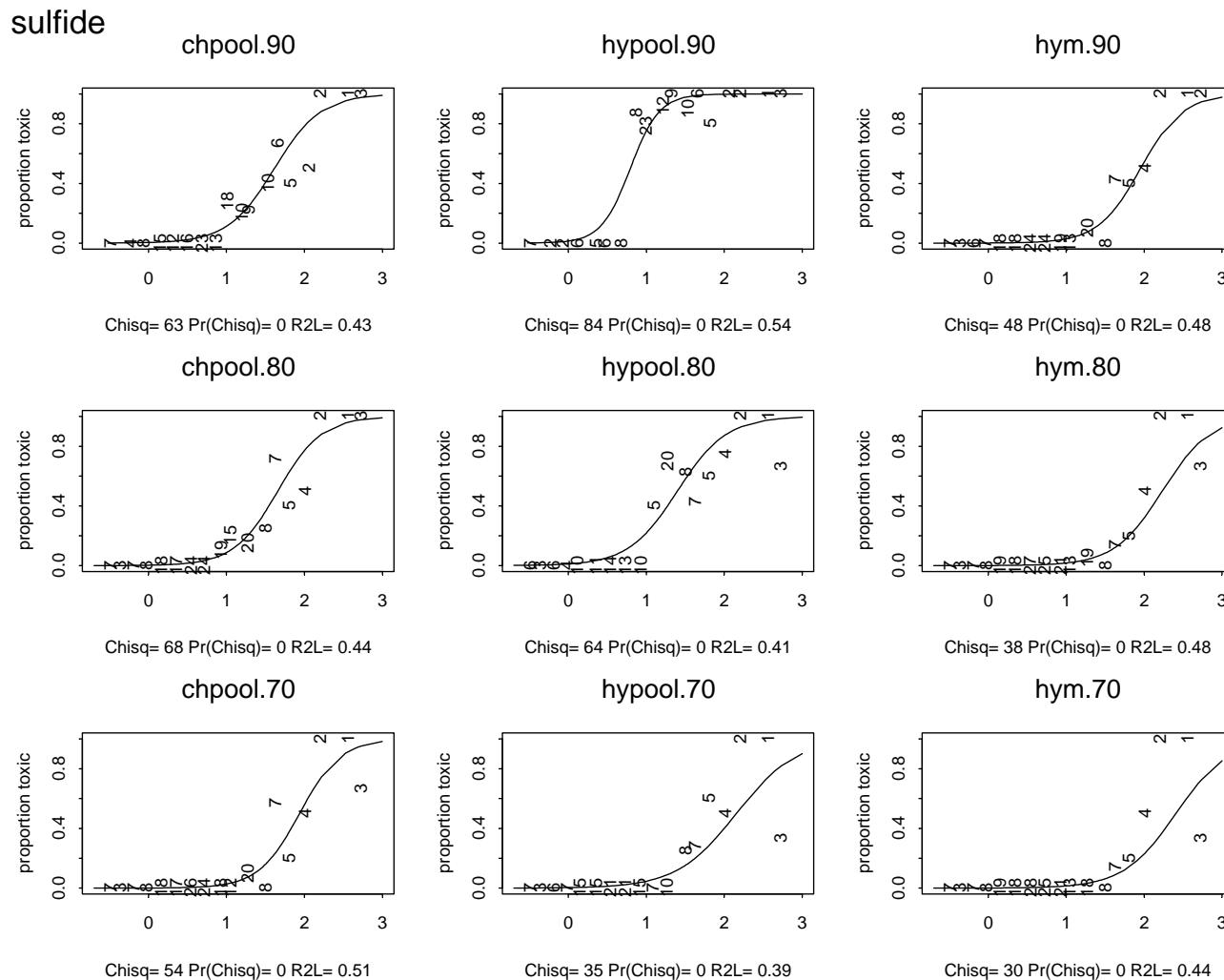


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-1. Logistic regression model – ammonia

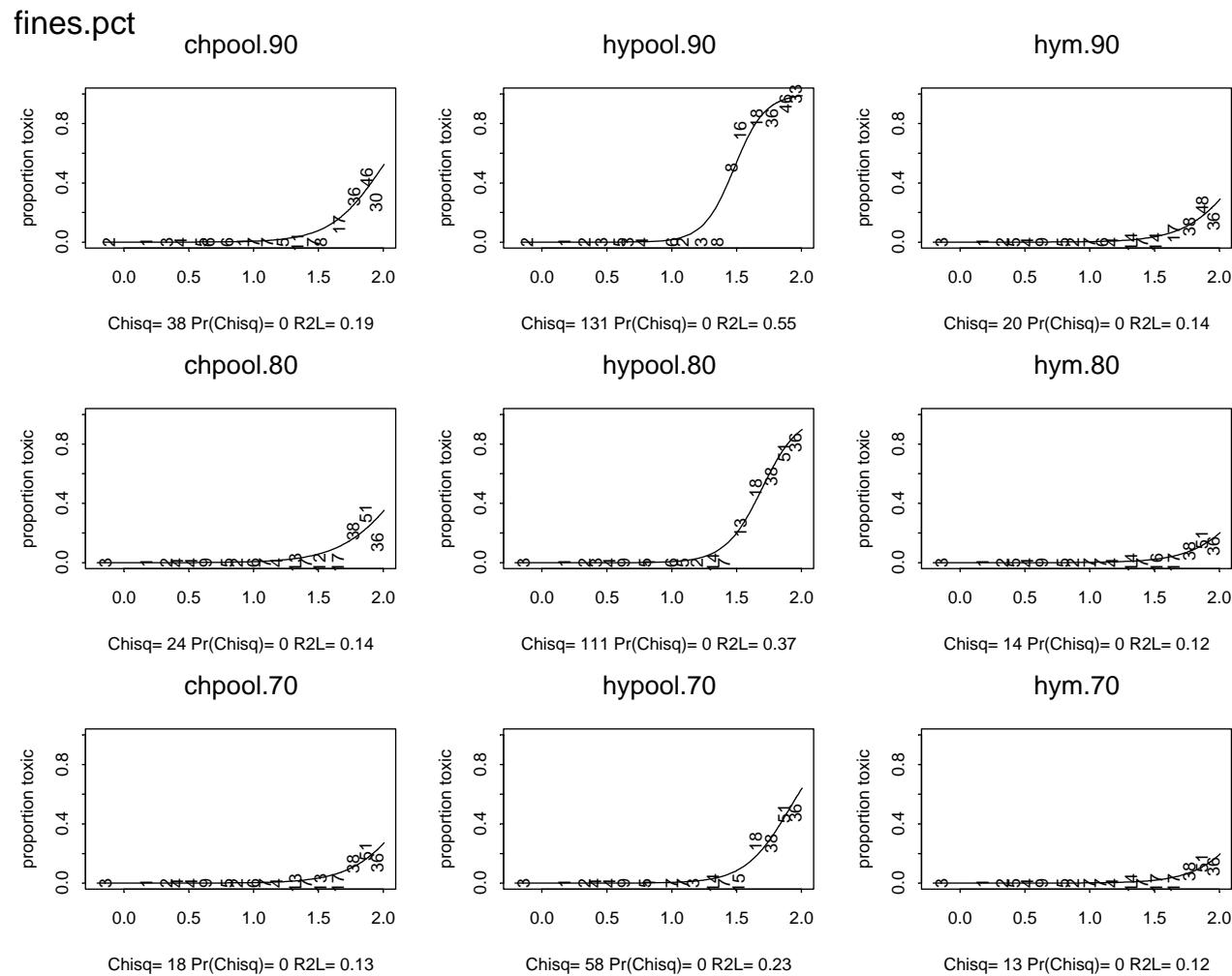
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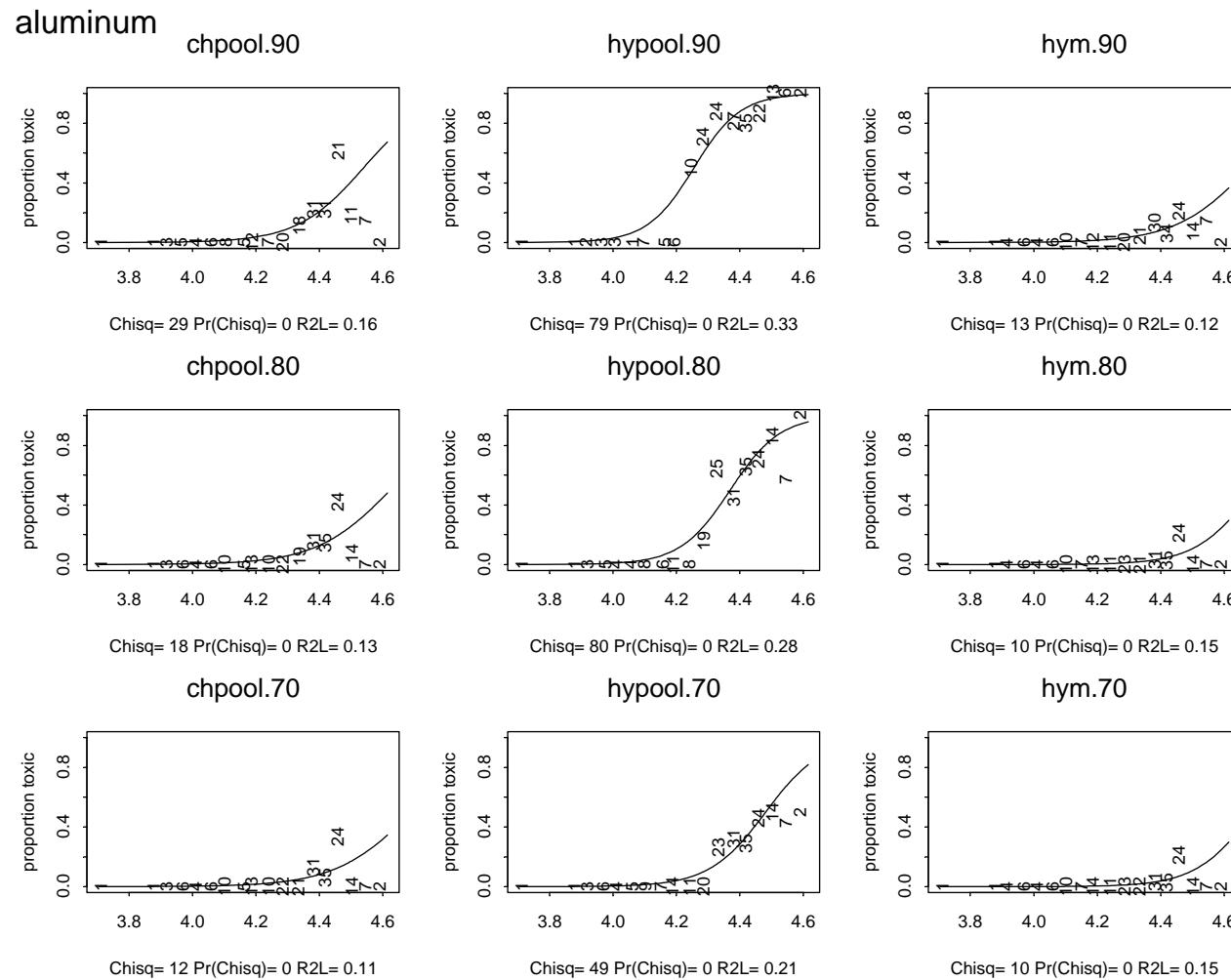
Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-2. Logistic regression model – sulfide



Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-3. Logistic regression model – percent fines

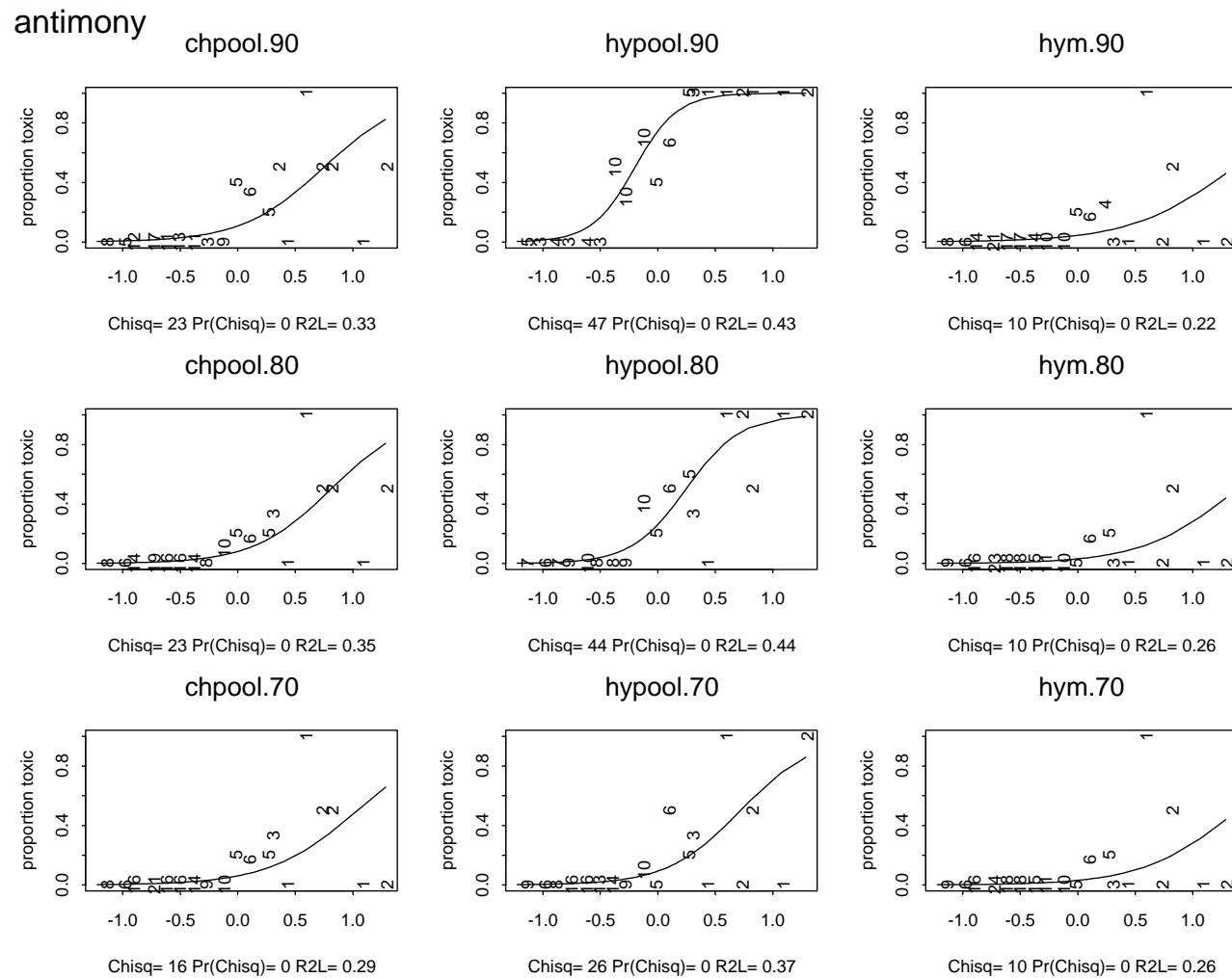


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level (L1 = .90; L2 = .80; L3 = .70).

Figure E-4. Logistic regression model – aluminum

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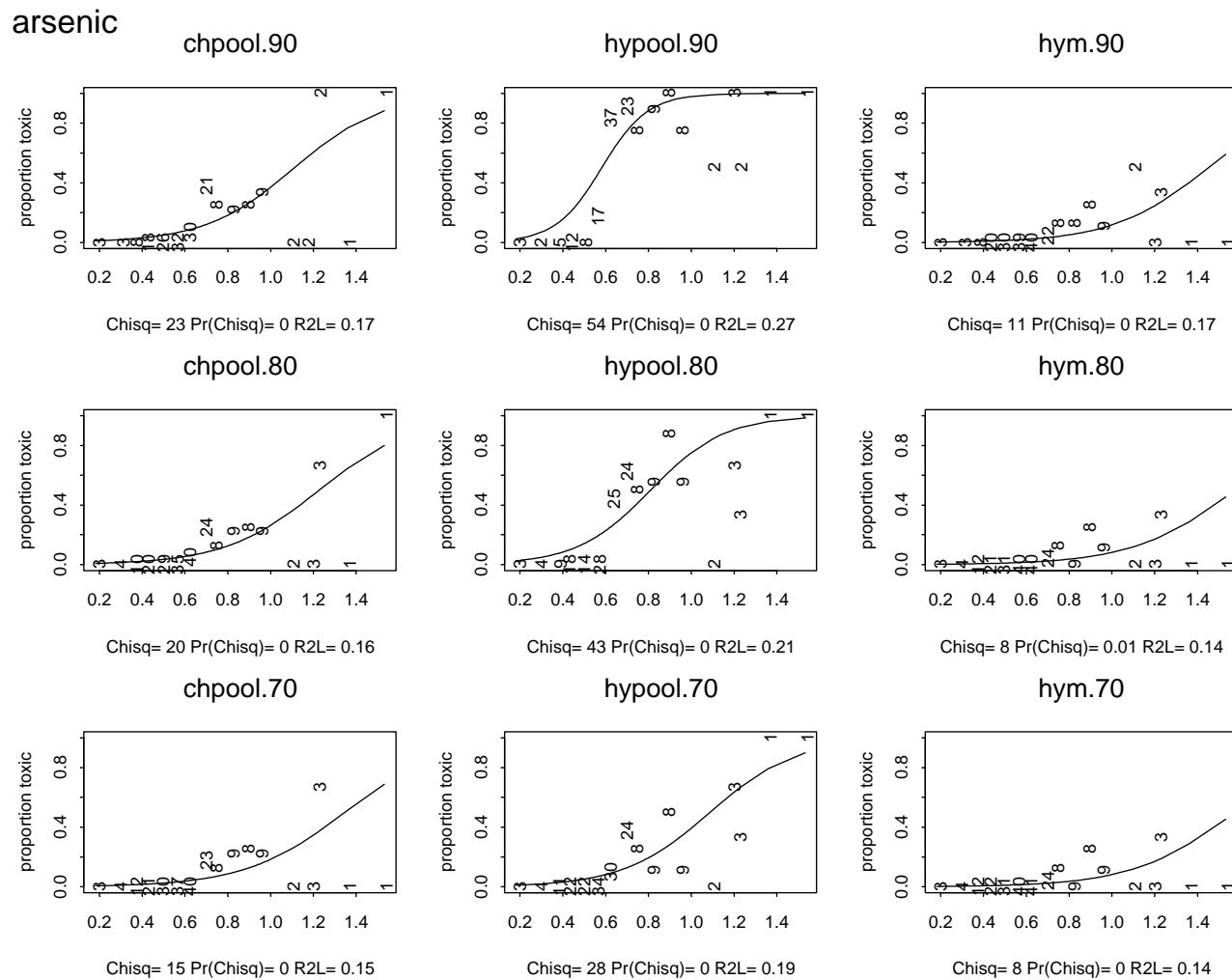


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-5. Logistic regression model – antimony

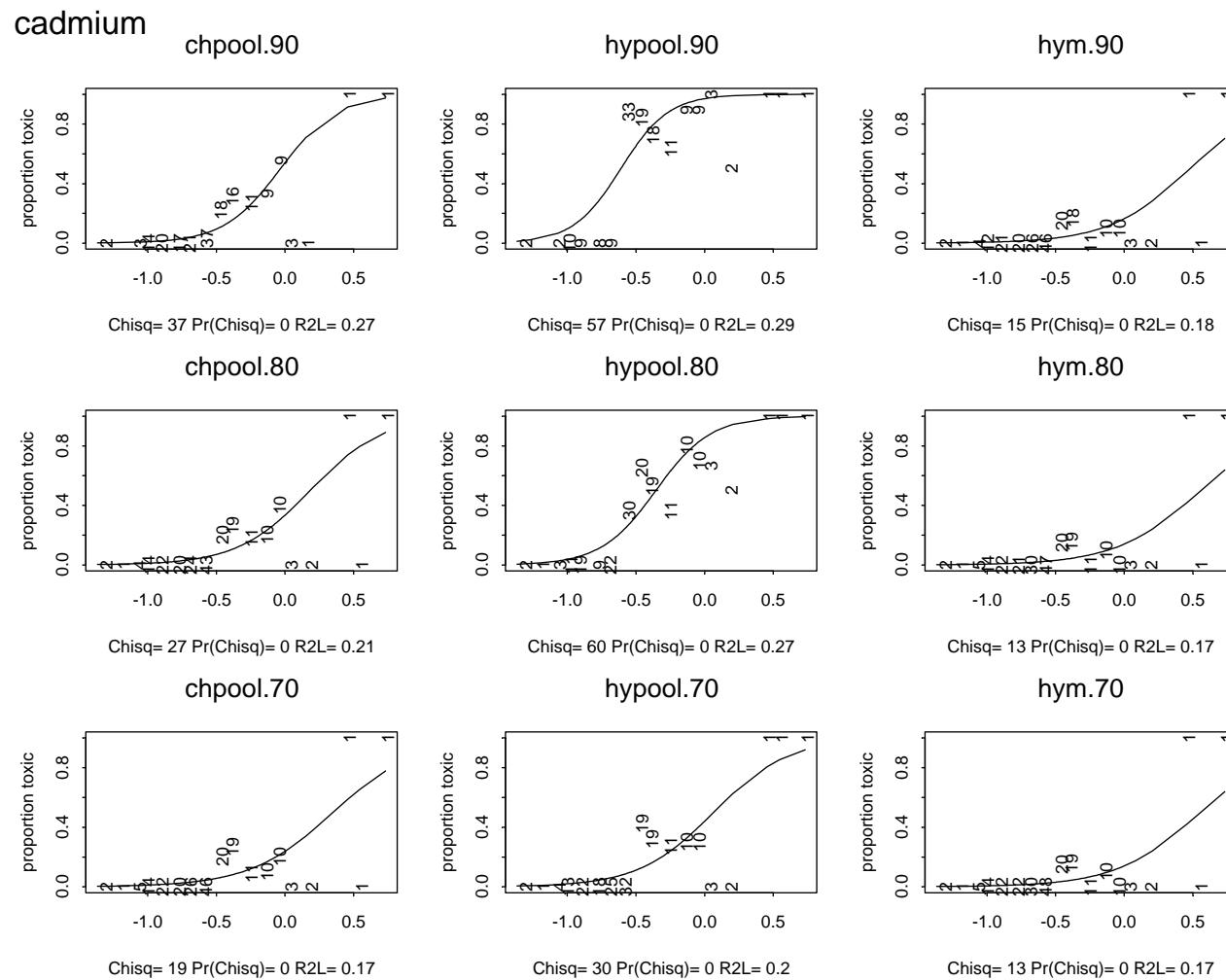
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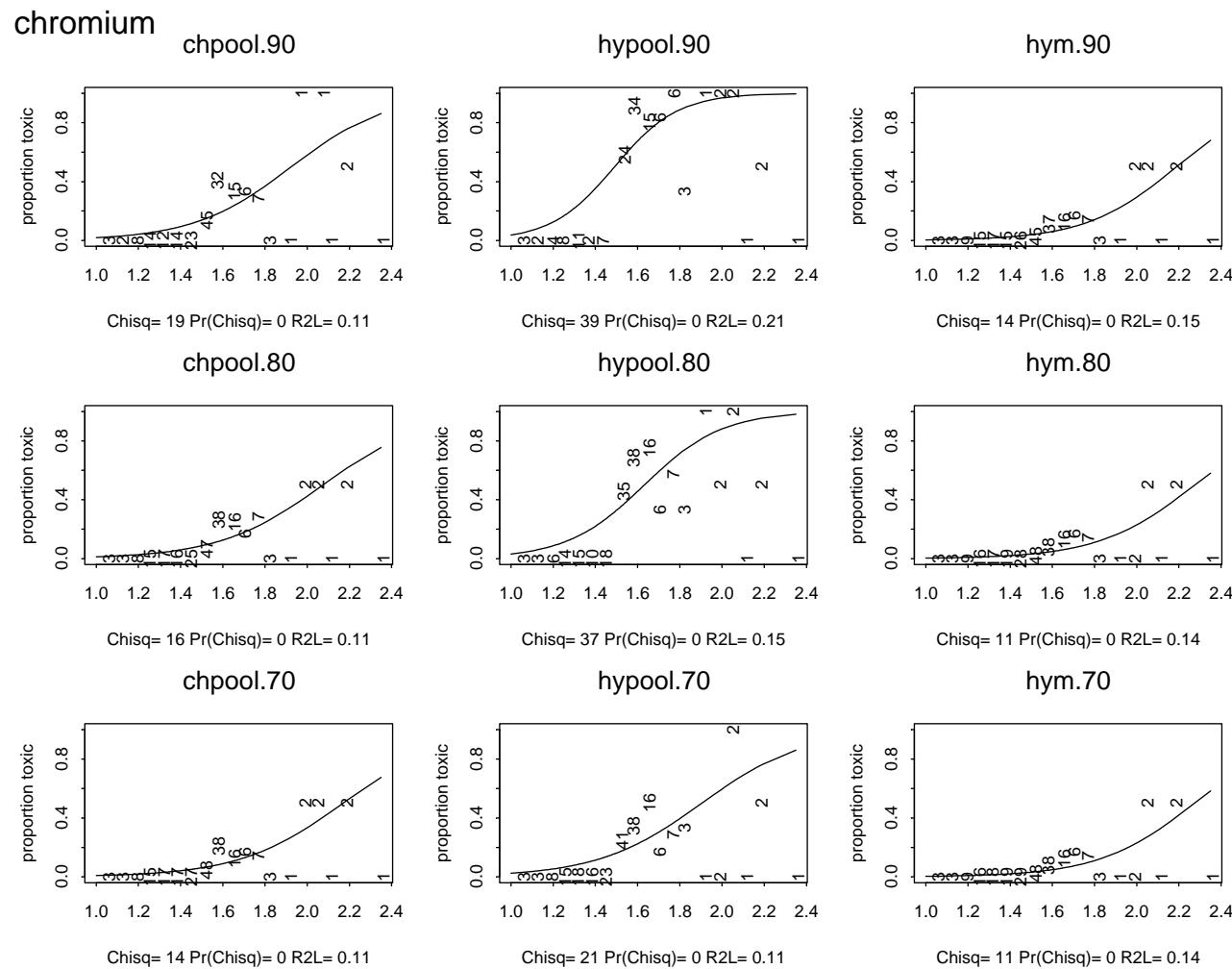
Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-6. Logistic regression model – arsenic



Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-7. Logistic regression model – cadmium

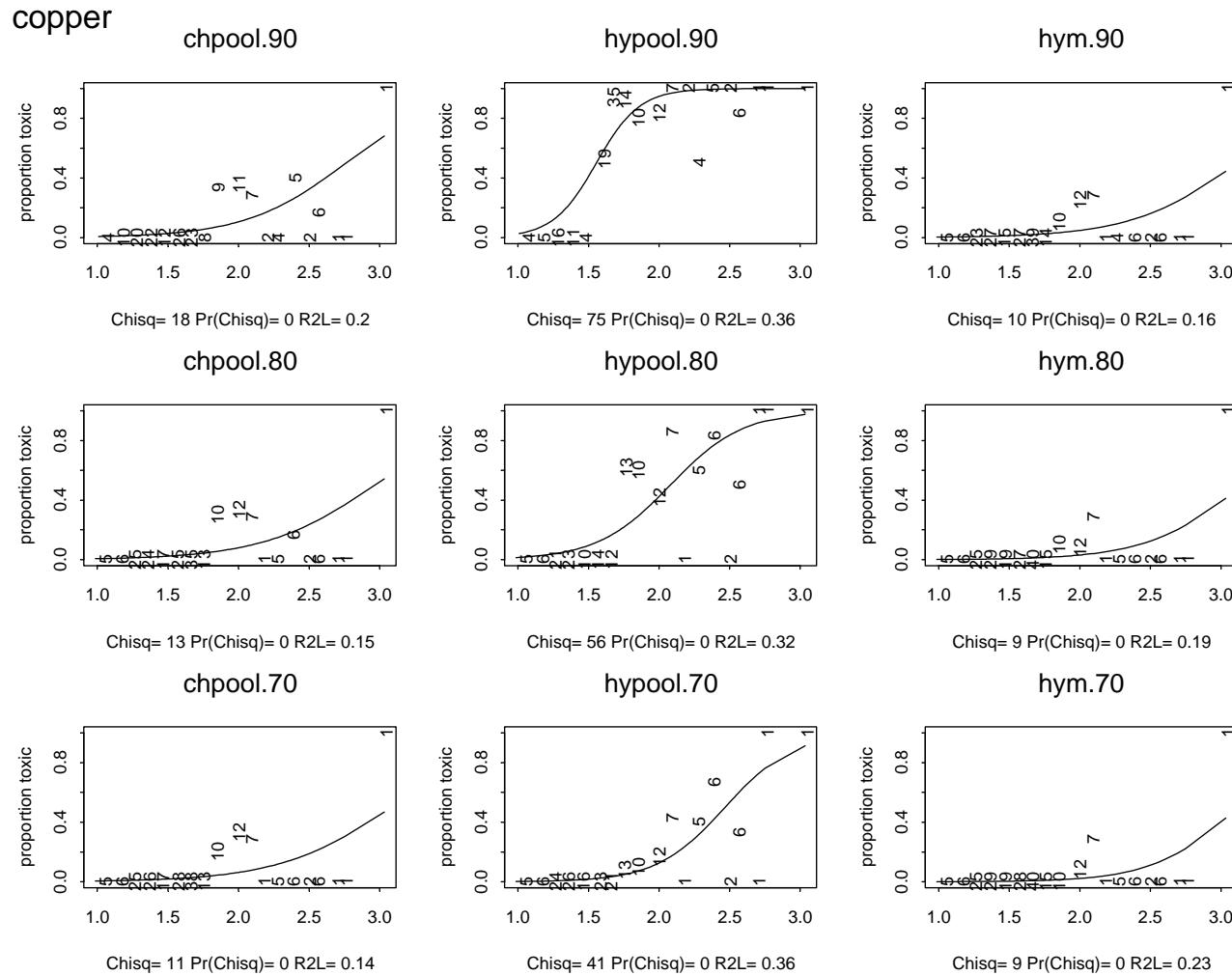


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-8. Logistic regression model – chromium

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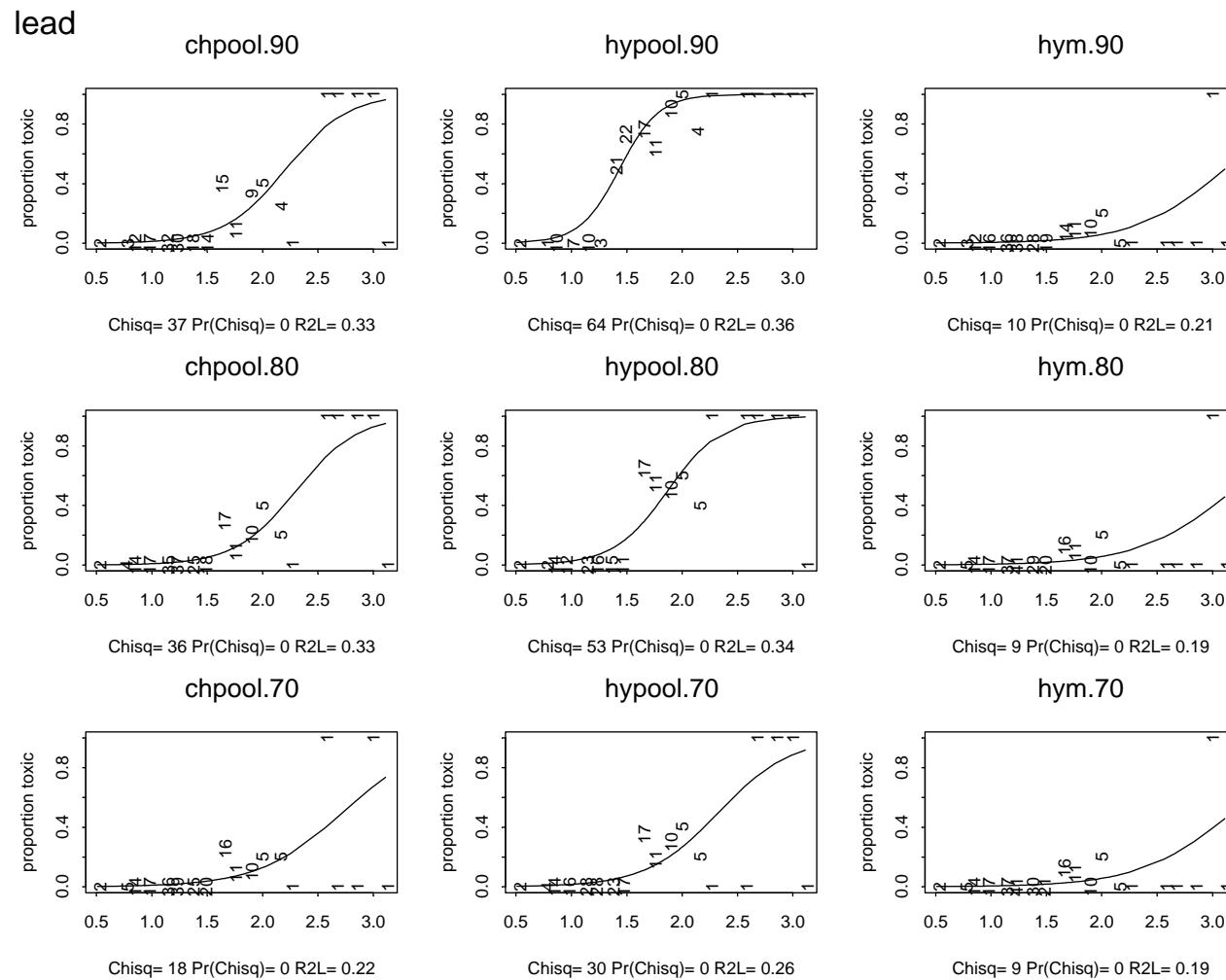


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level (L1 = .90; L2 = .80; L3 = .70).

Figure E-9. Logistic regression model – copper

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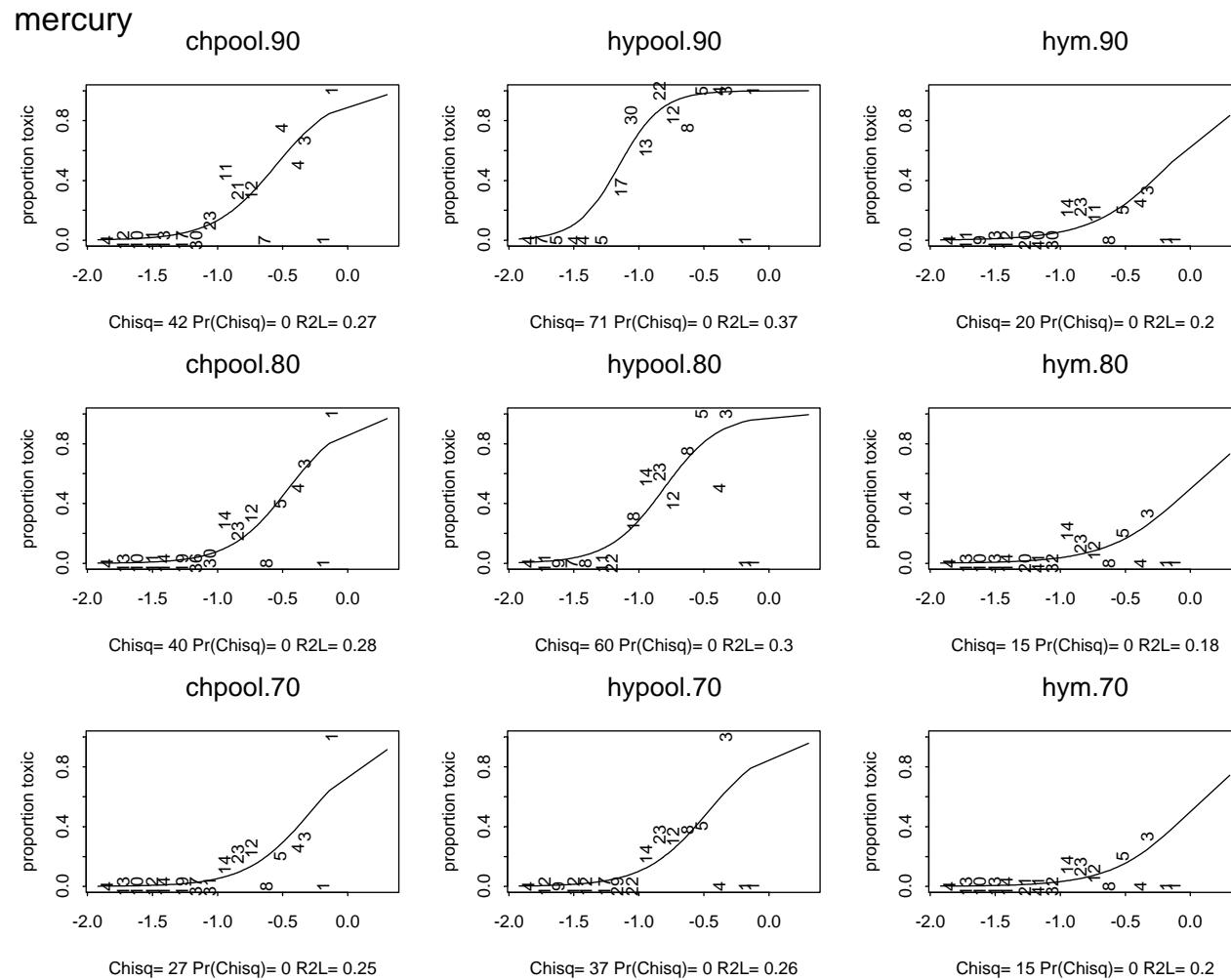


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-10. Logistic regression model – lead

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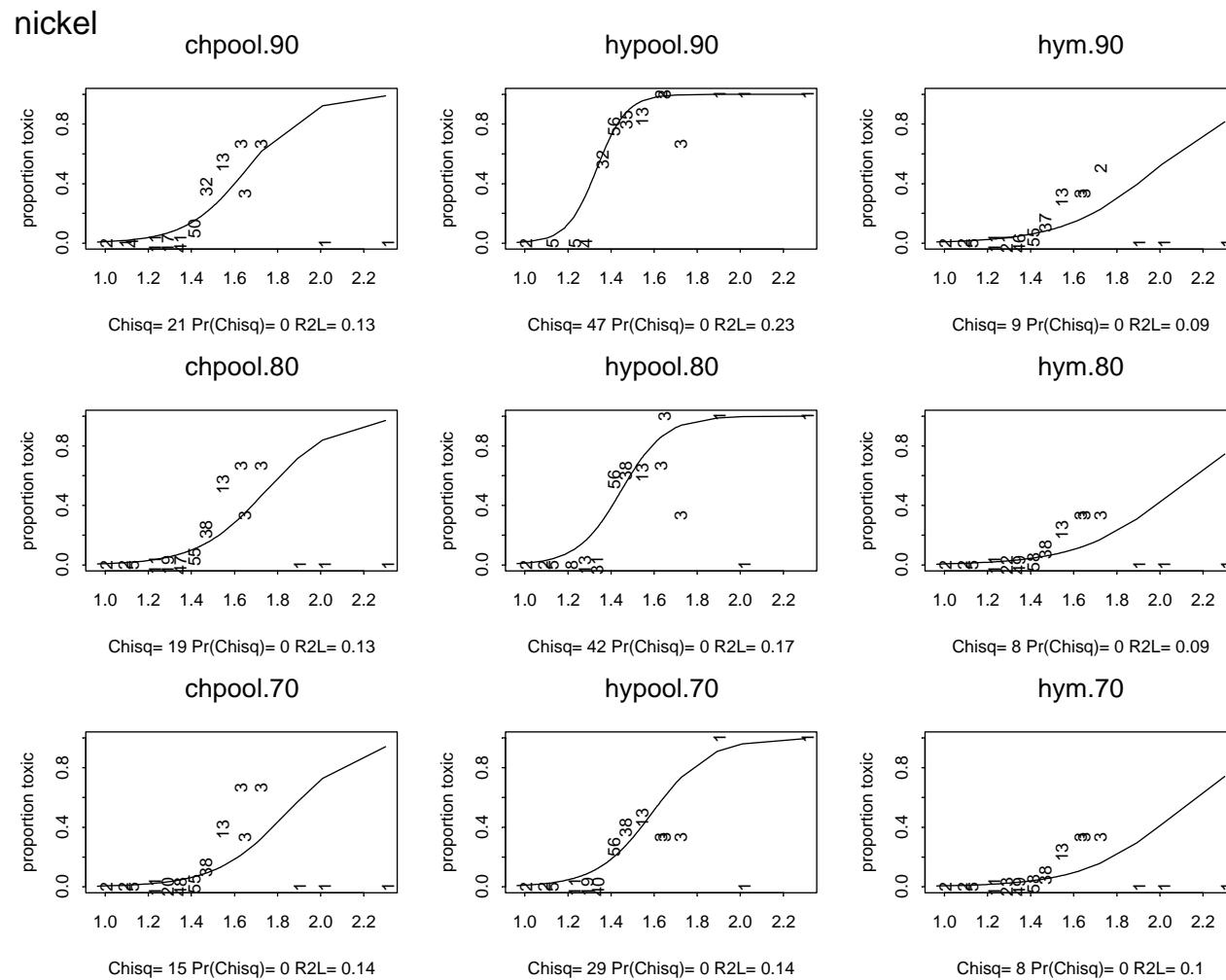


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-11. Logistic regression model – mercury

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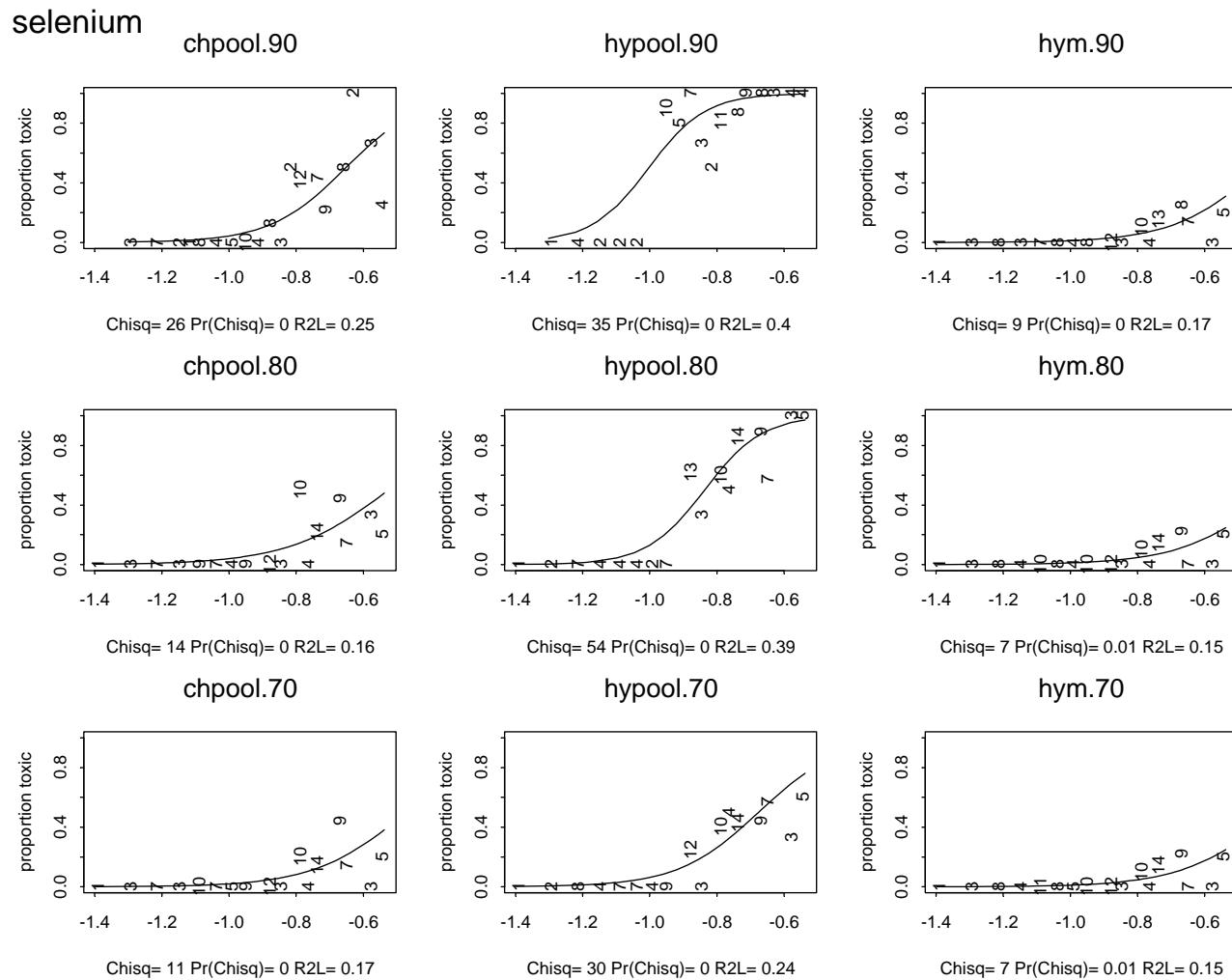


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-12. Logistic regression model – nickel

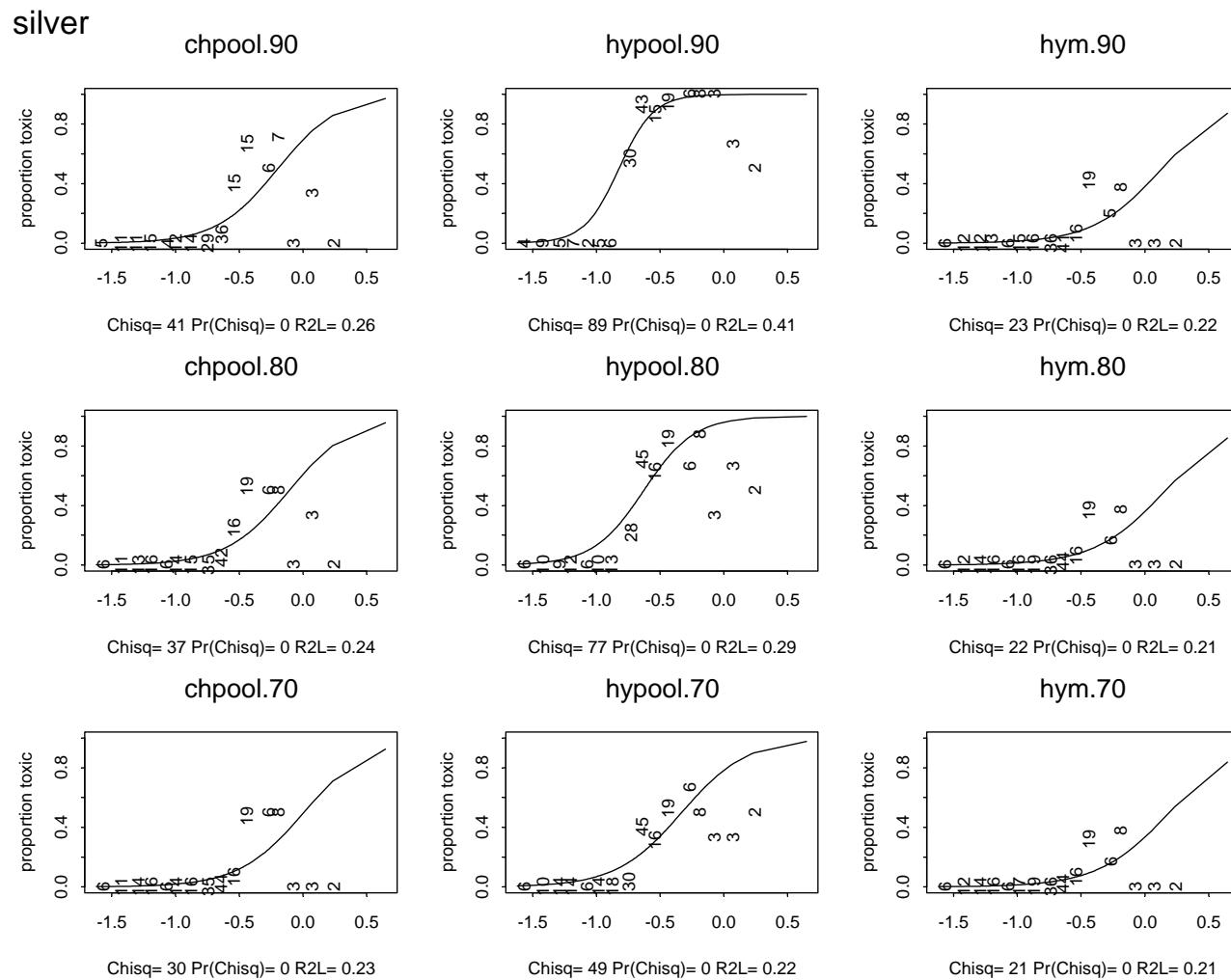
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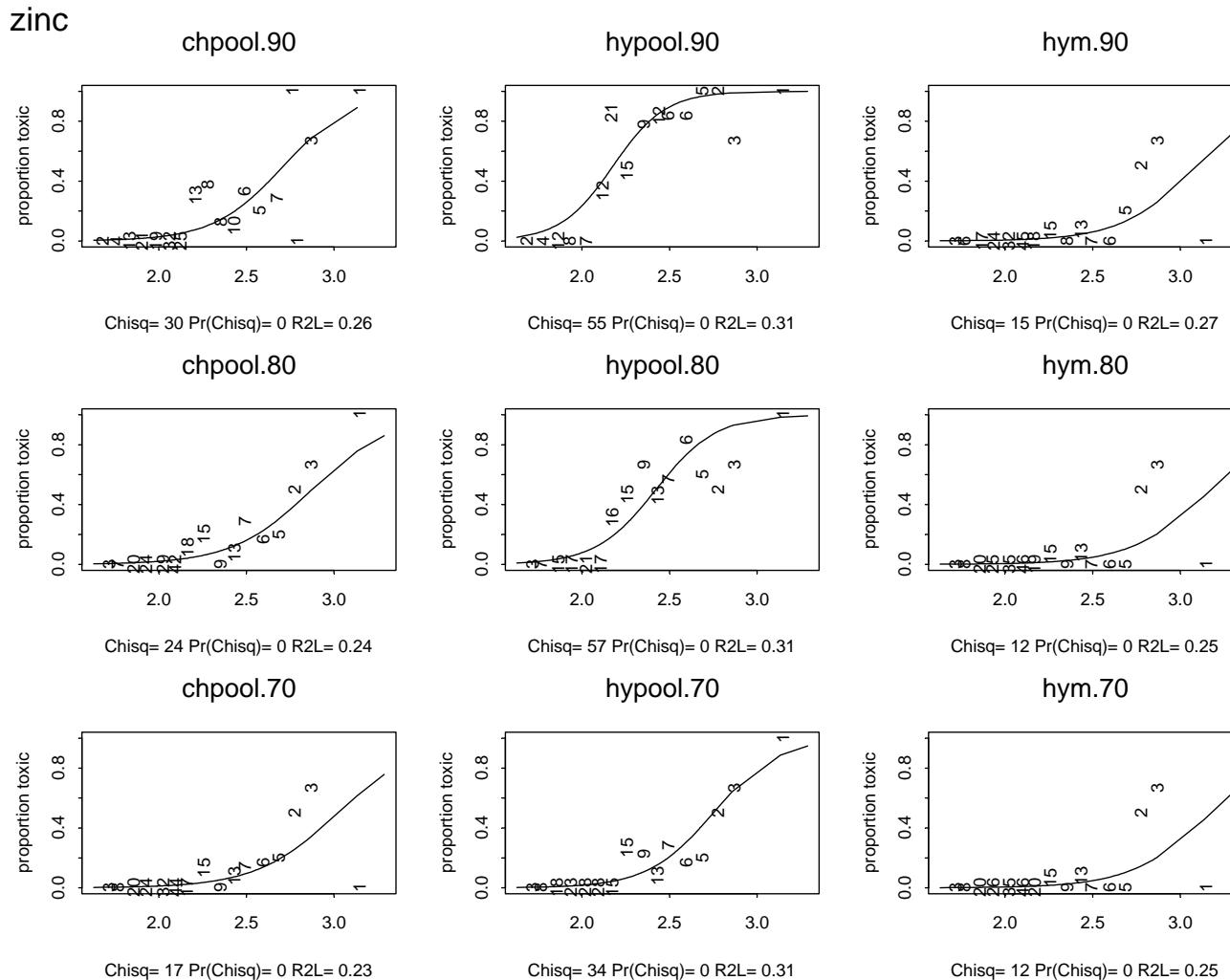
Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-13. Logistic regression model – selenium



Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-14. Logistic regression model – silver

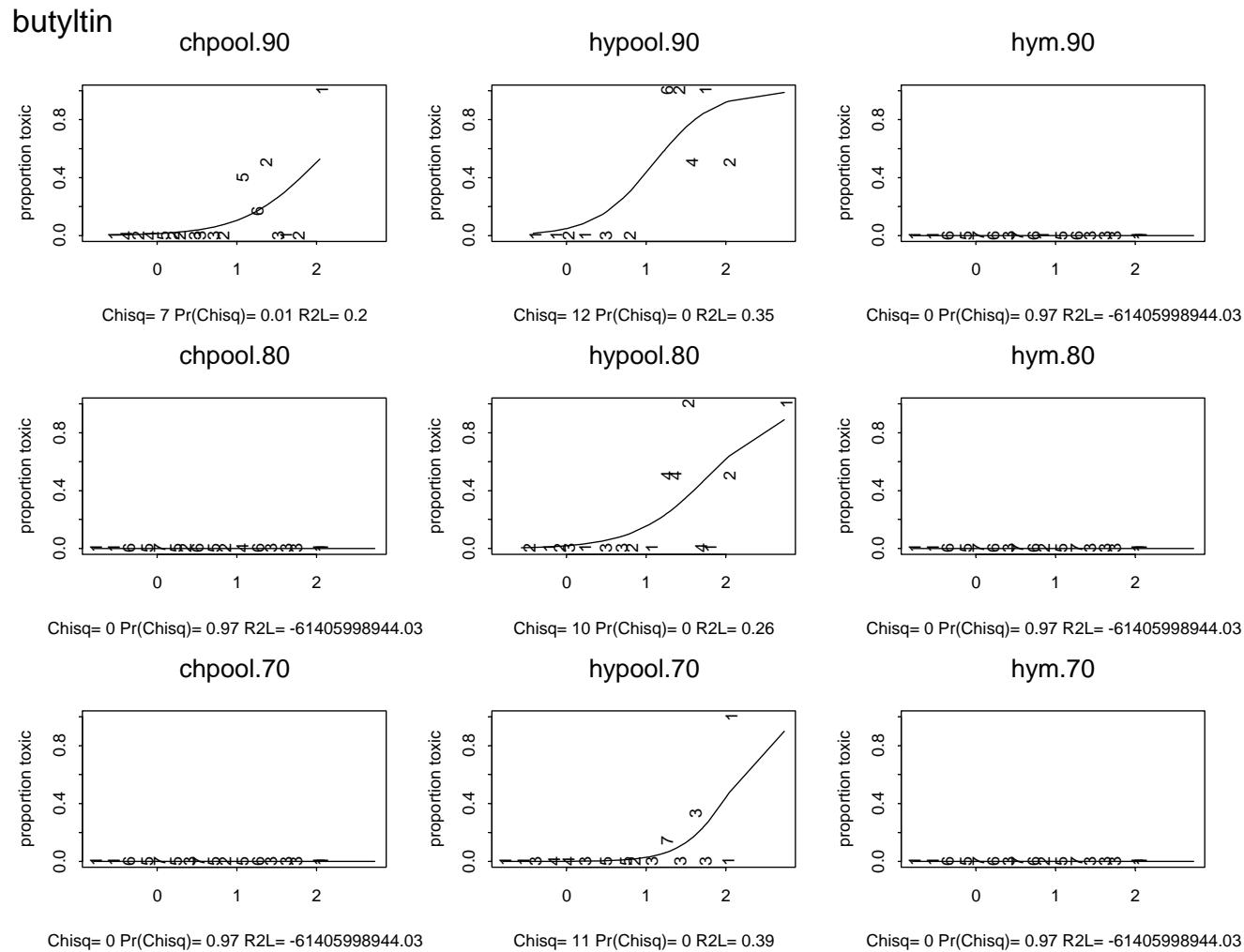


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level (L1 = .90; L2 = .80; L3 = .70).

Figure E-15. Logistic regression model – zinc

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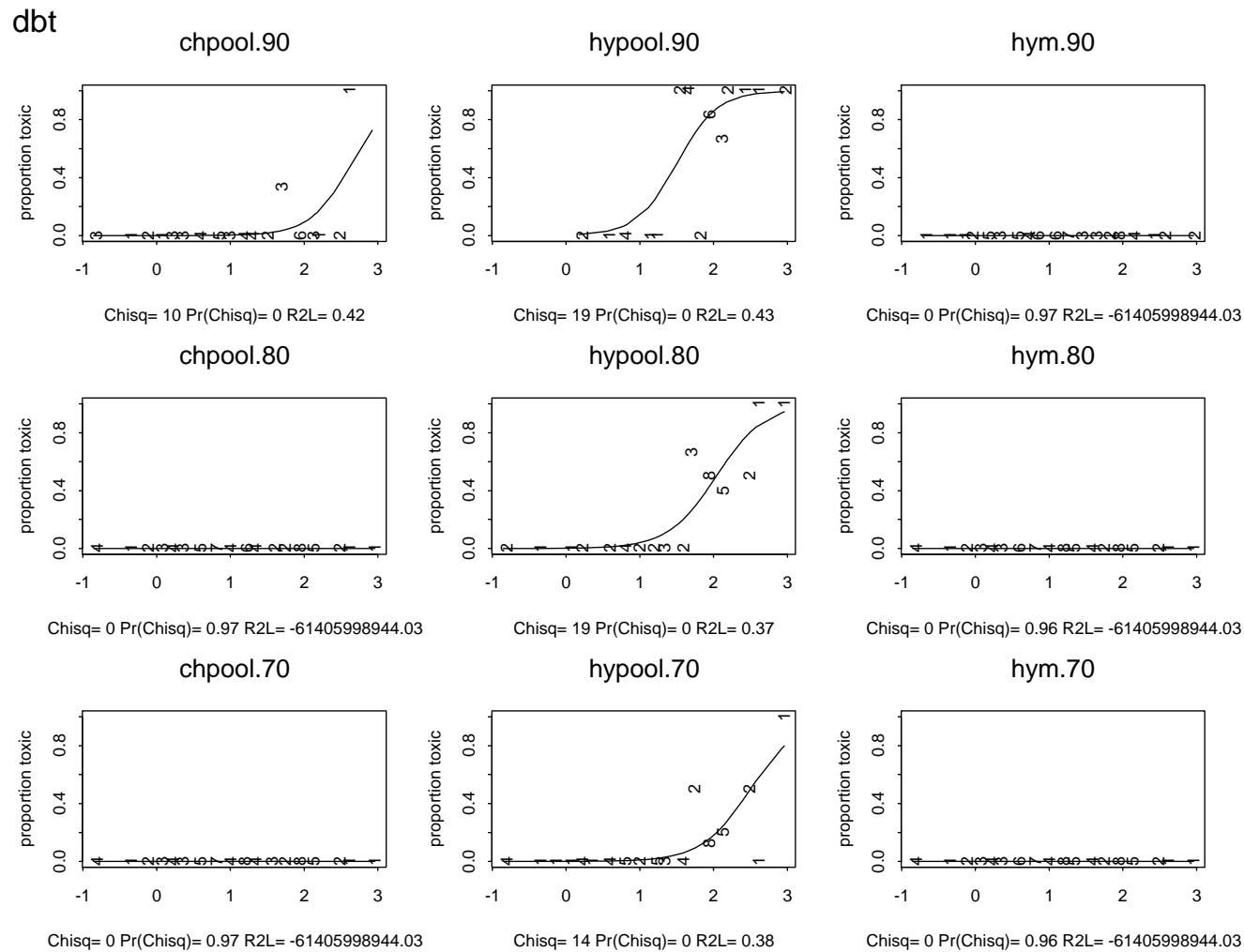


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level (L1 = .90; L2 = .80; L3 = .70).

Figure E-16. Logistic regression model – butyltin

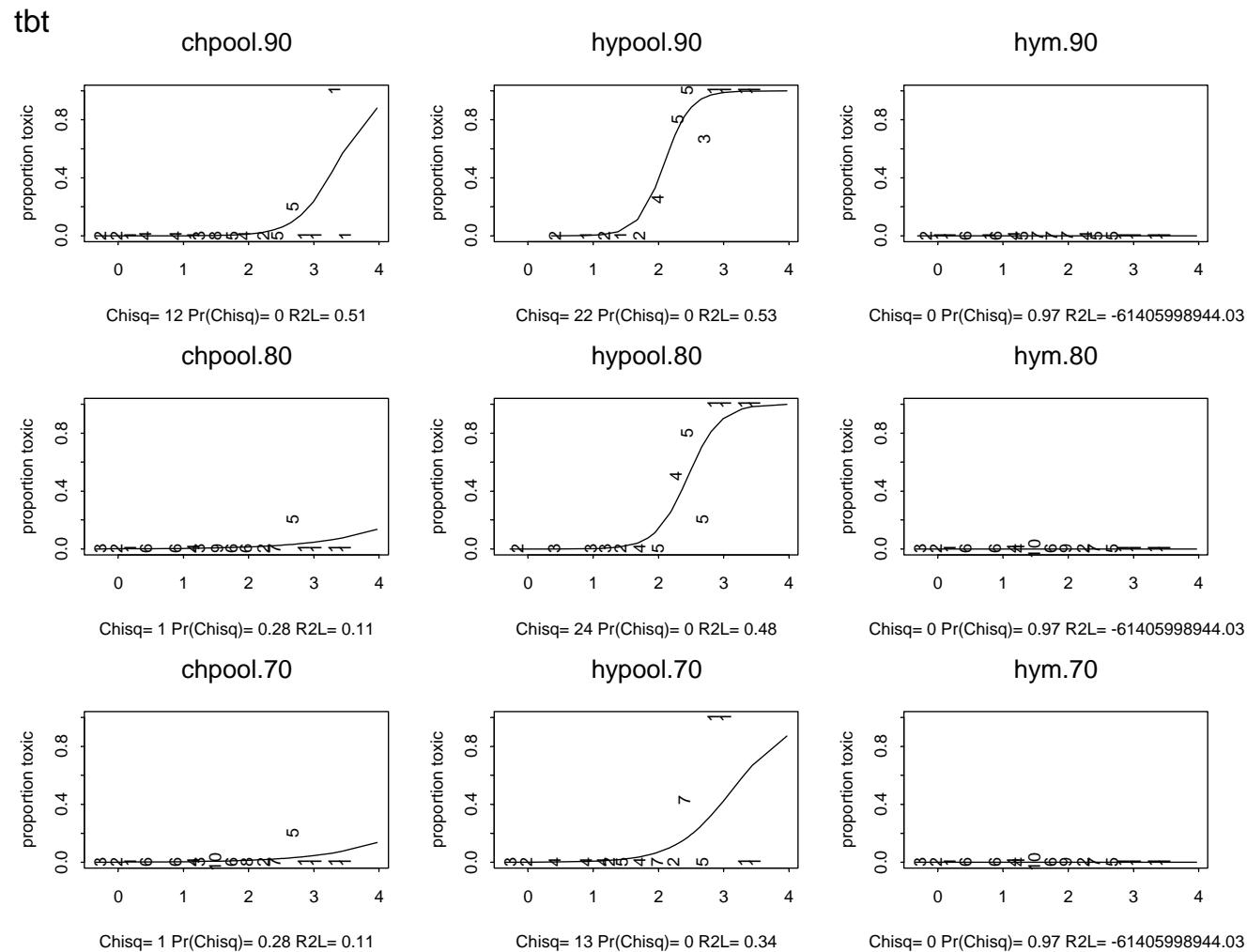
DO NOT QUOTE OR CITE

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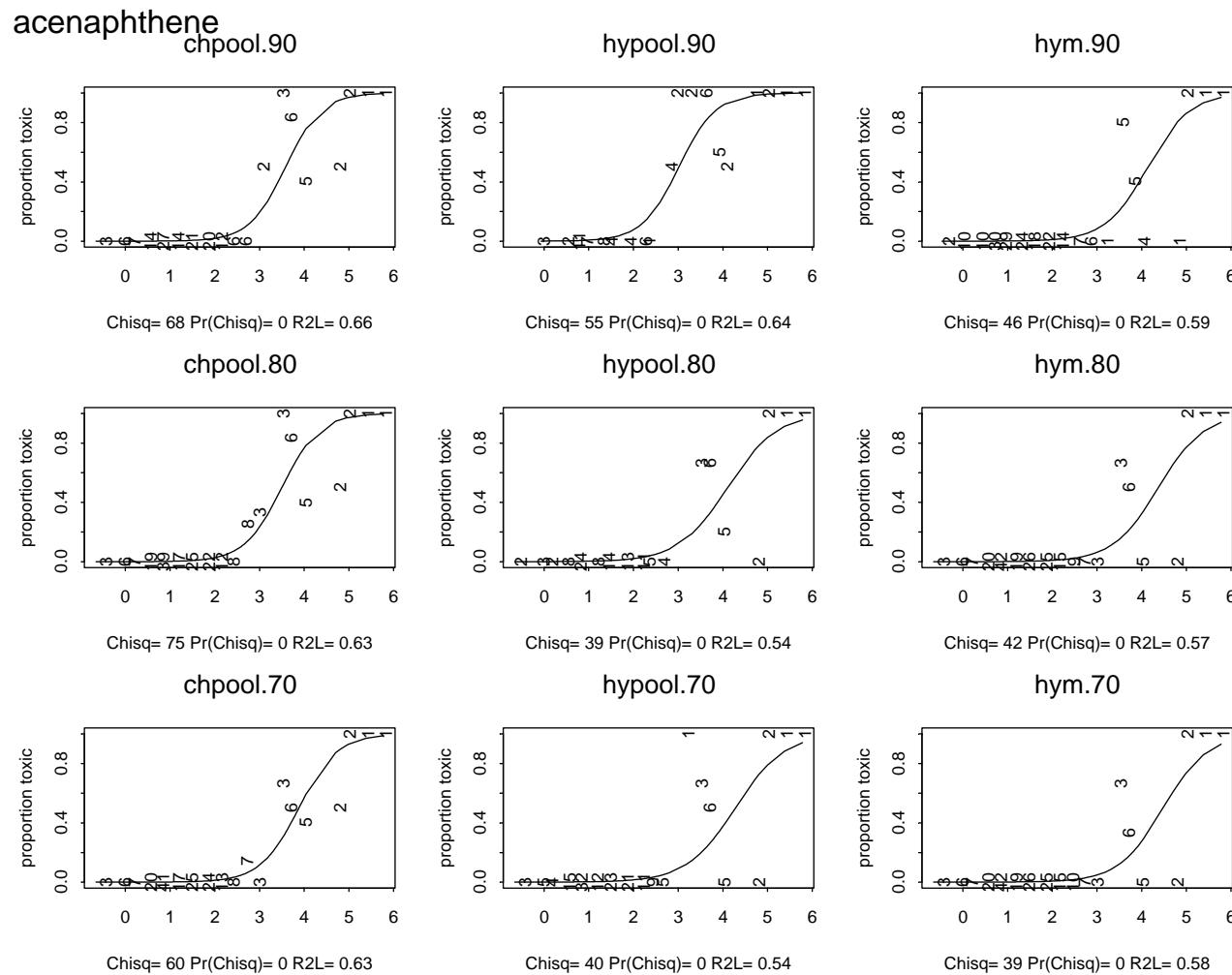
Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level (L1 = .90; L2 = .80; L3 = .70).

Figure E-17. Logistic regression model – dibutyltin



Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-18. Logistic regression model – tributyltin

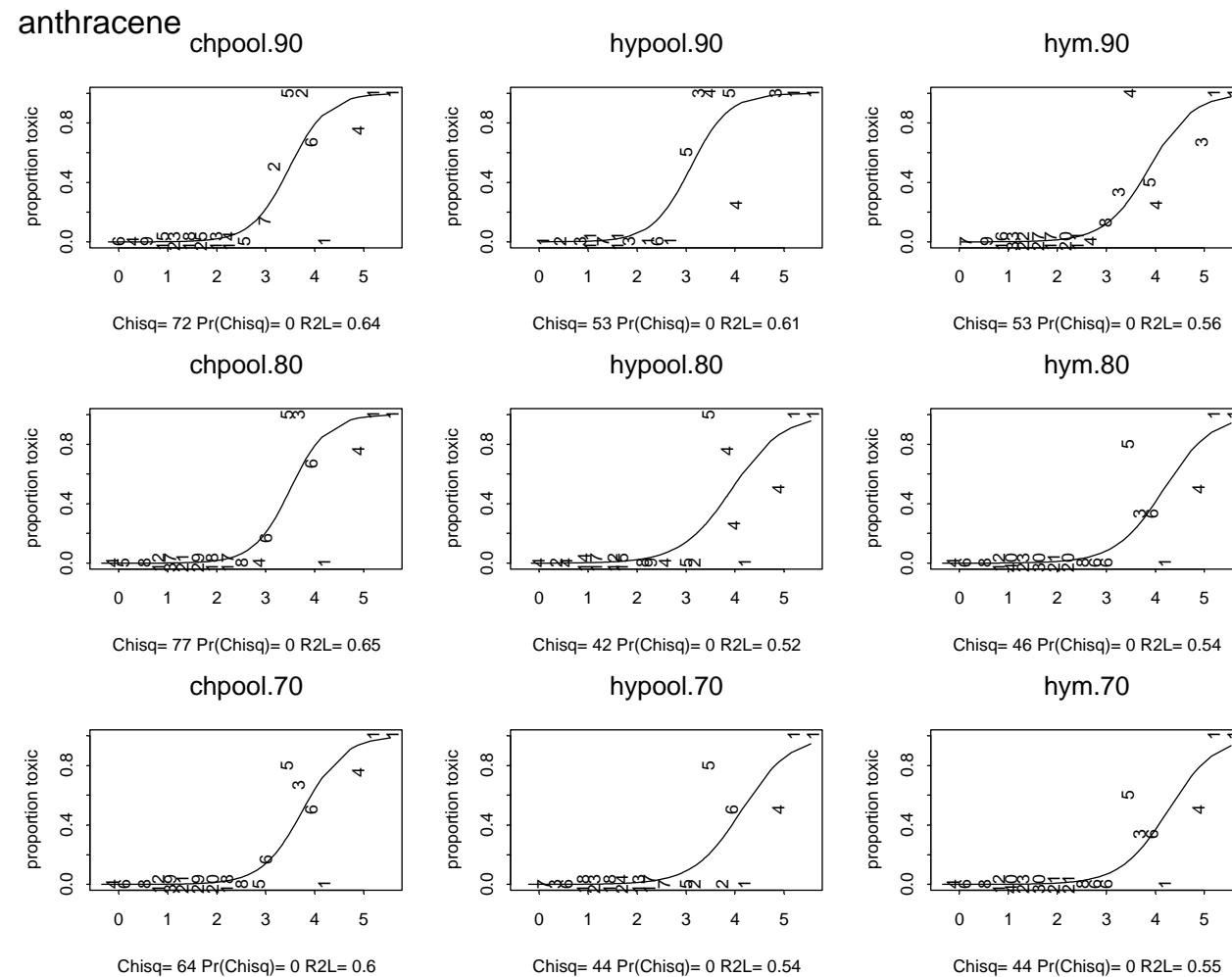


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-19. Logistic regression model – acenaphthene

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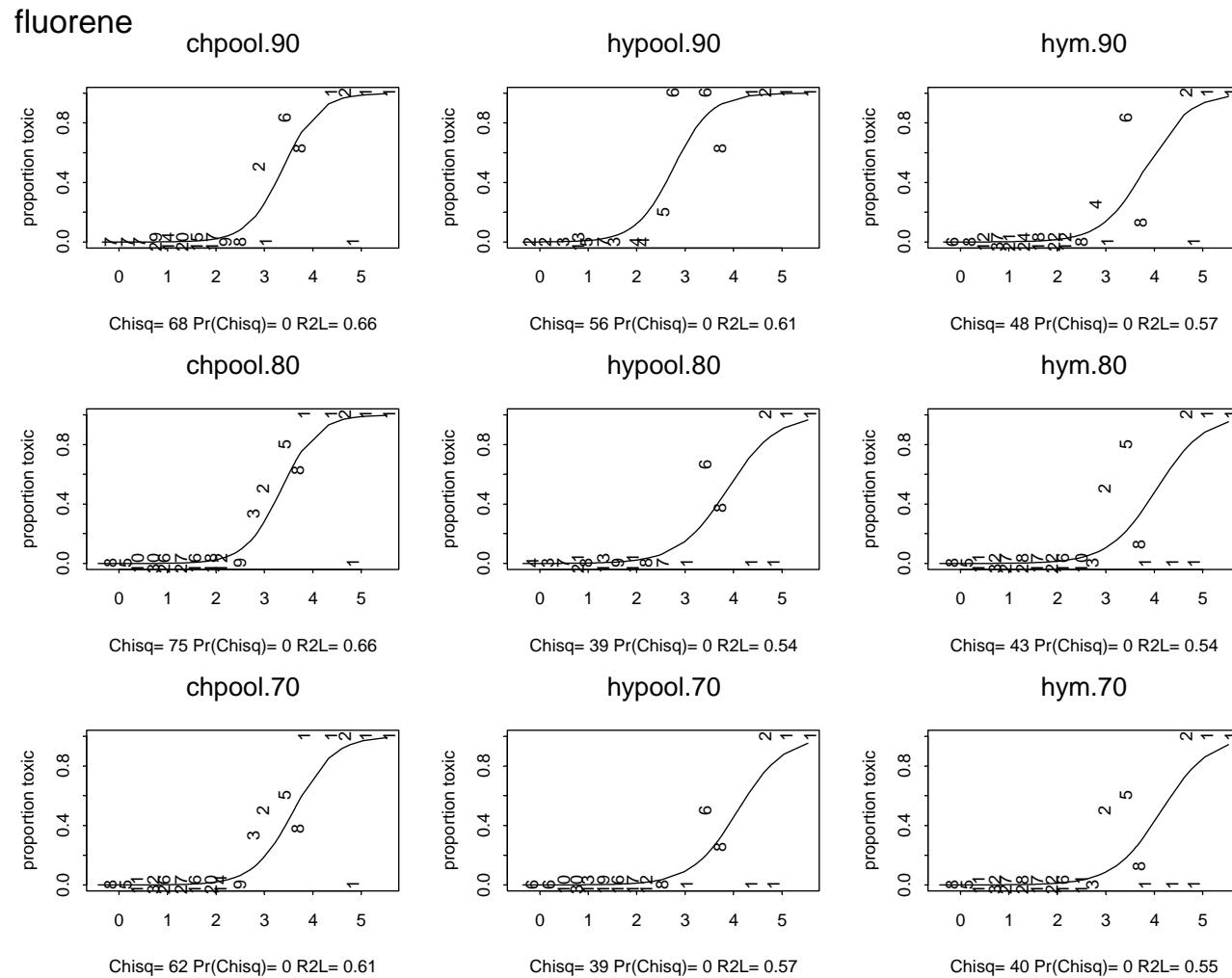


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level (L1 = .90; L2 = .80; L3 = .70).

Figure E-20. Logistic regression model – anthracene

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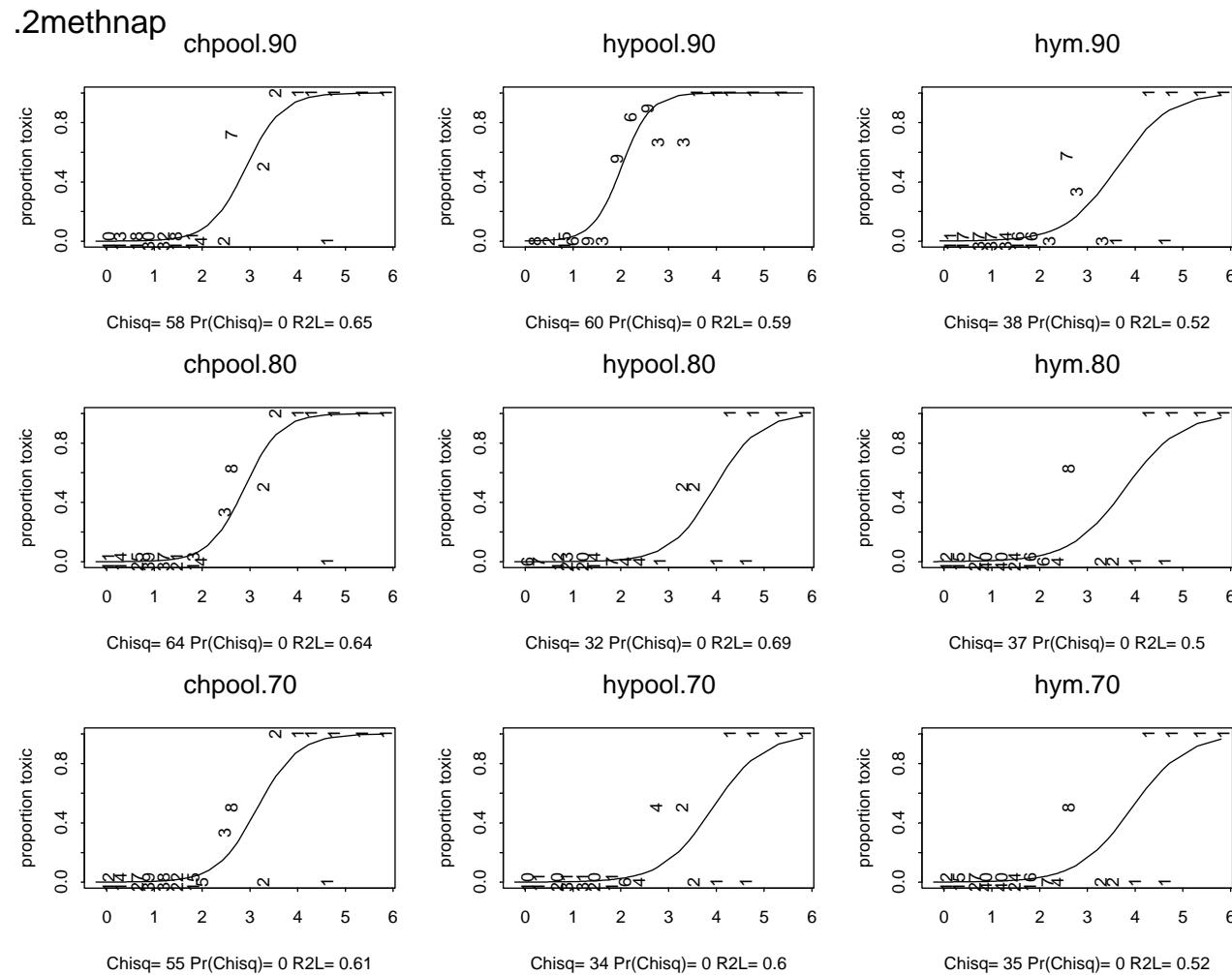


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-21. Logistic regression model – fluorene

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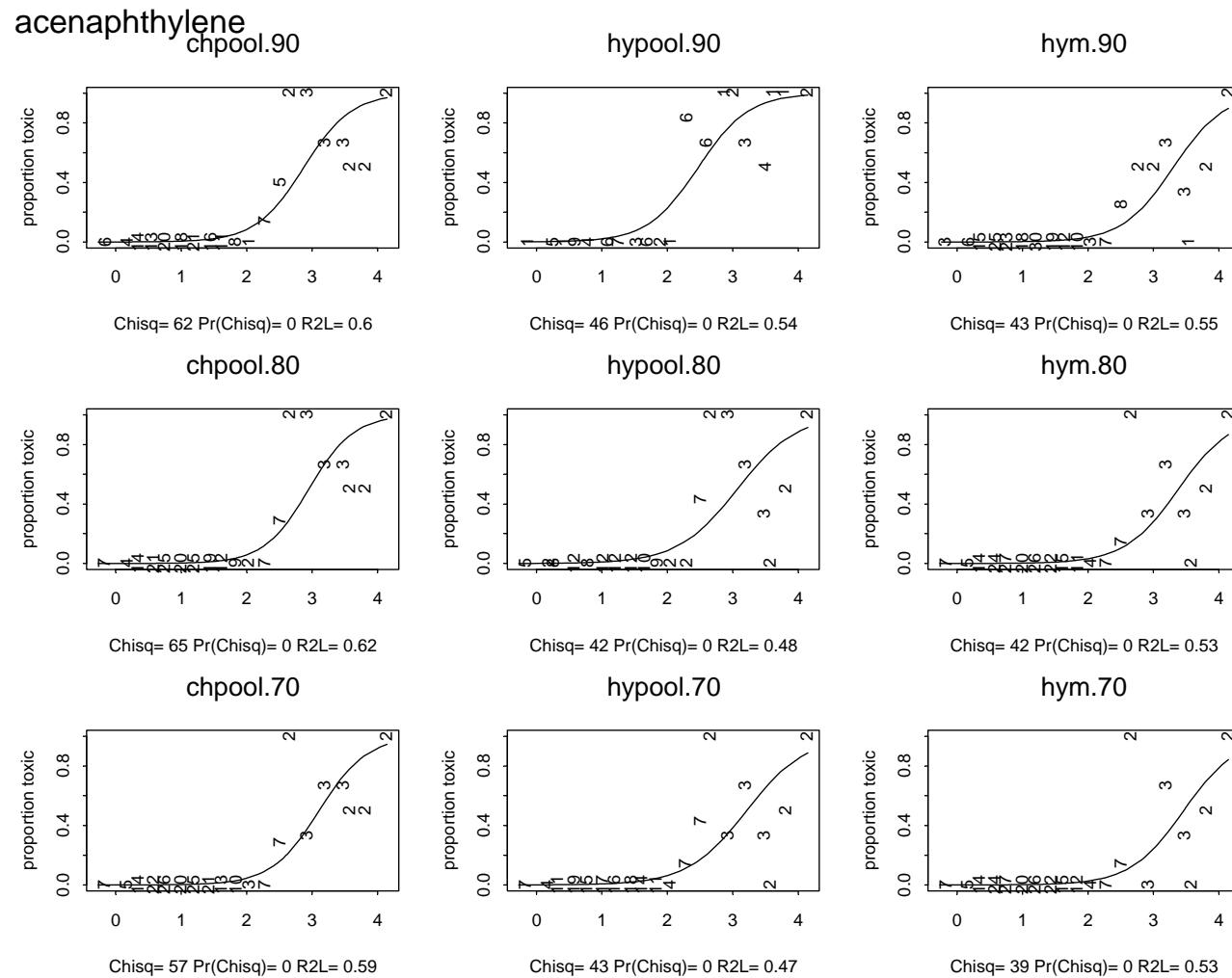


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-22. Logistic regression model – 2-methylnaphthalene

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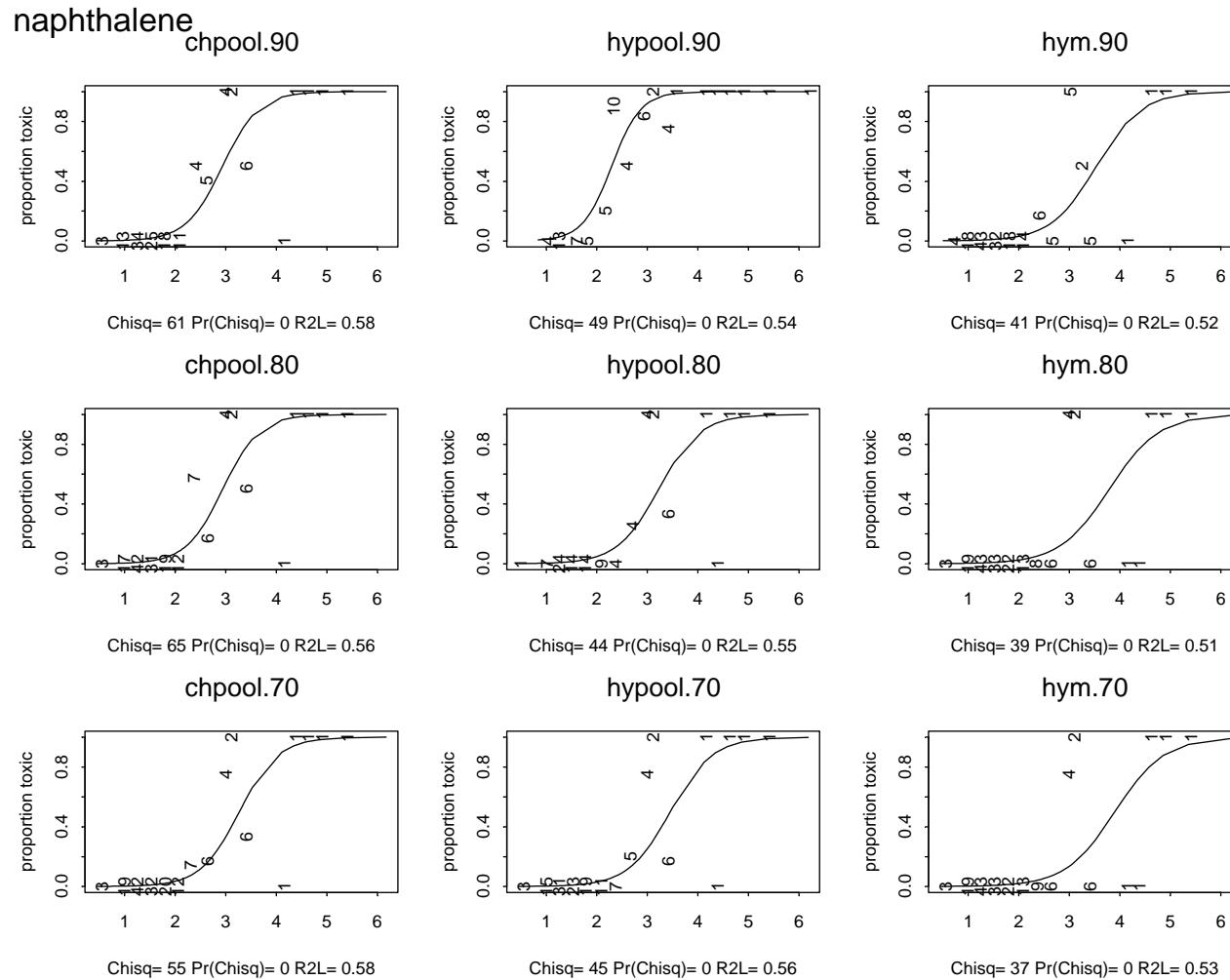


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-23. Logistic regression model – acenaphthylene

DO NOT QUOTE OR CITE

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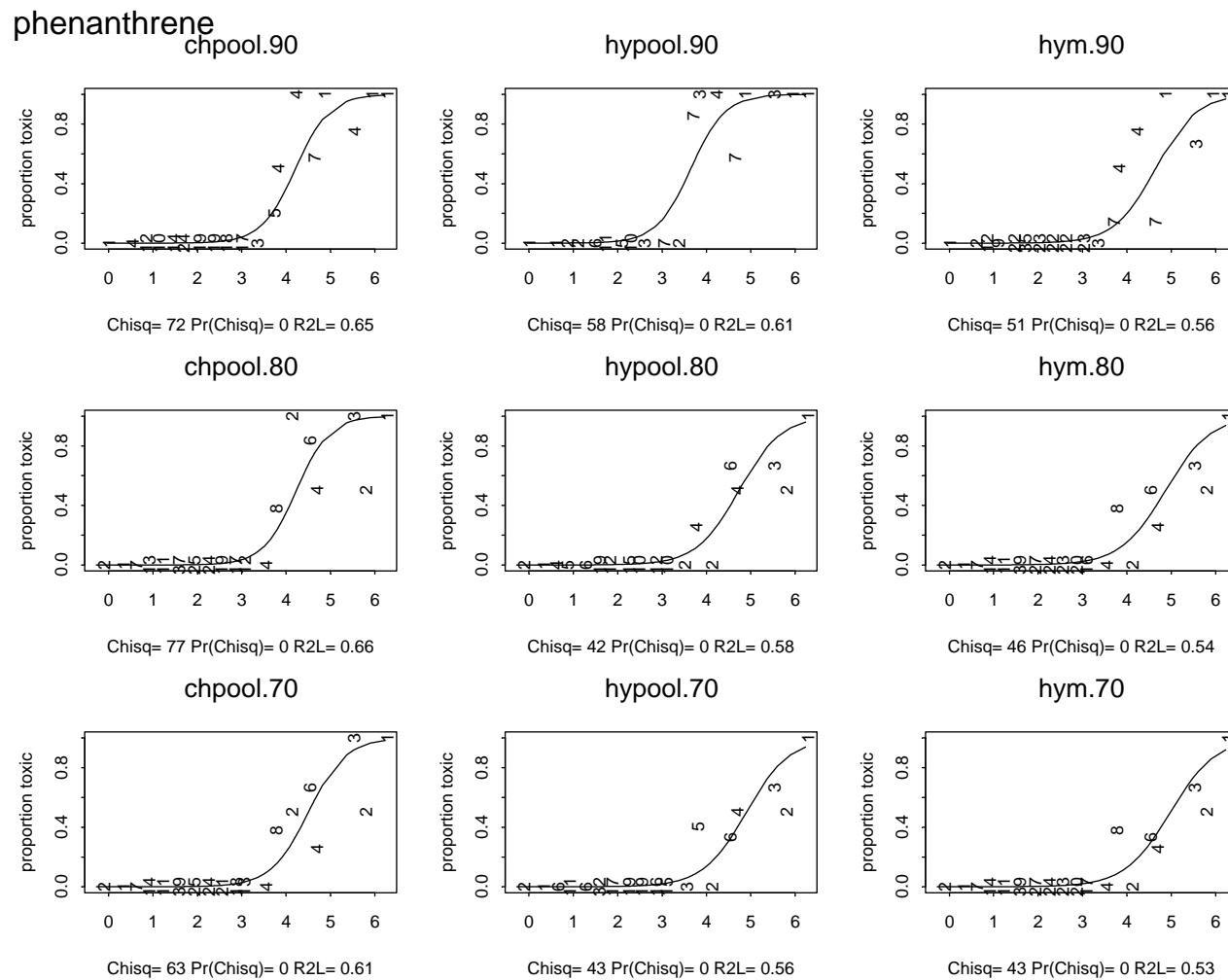


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-24. Logistic regression model – naphthalene

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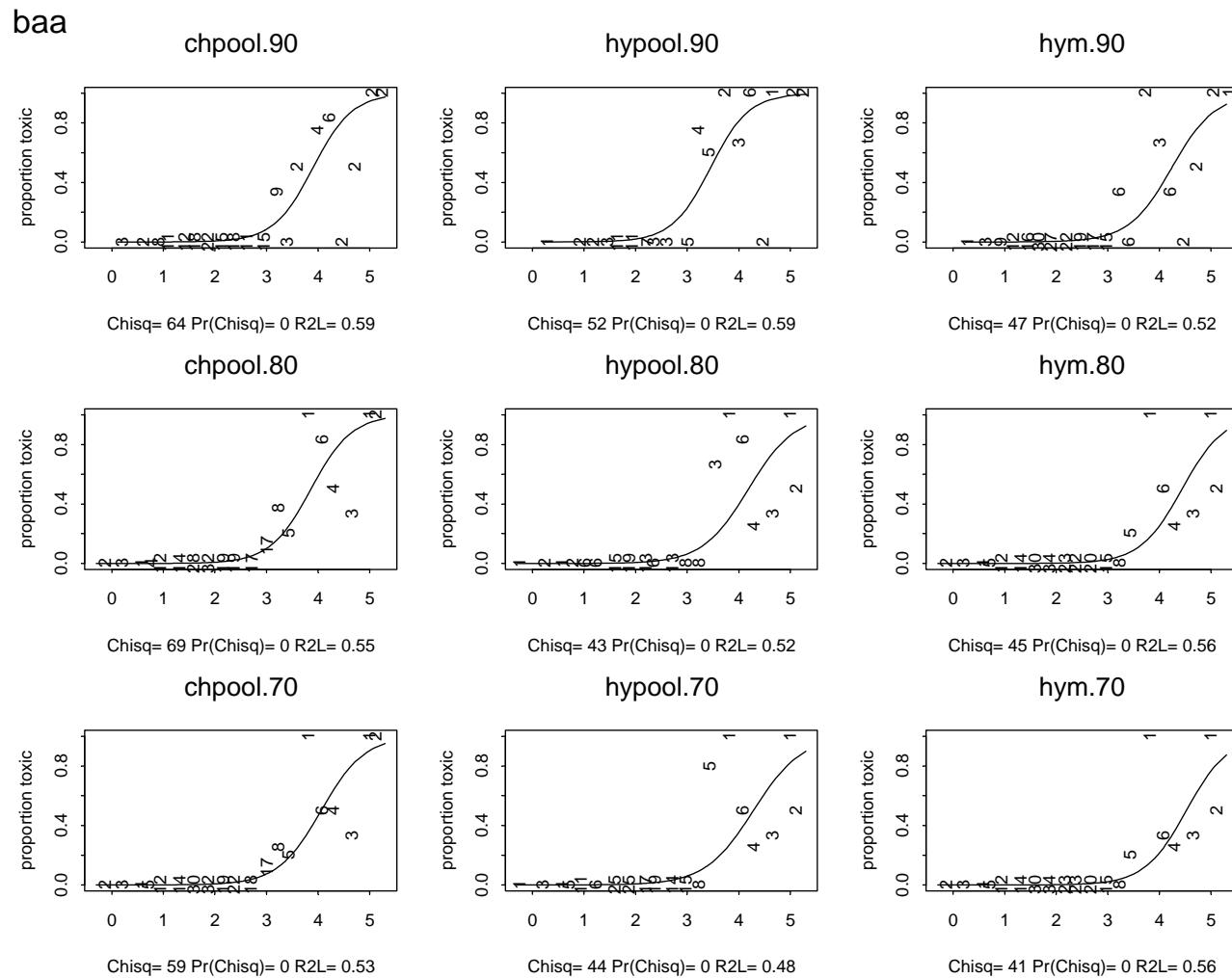


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-25. Logistic regression model – phenanthrene

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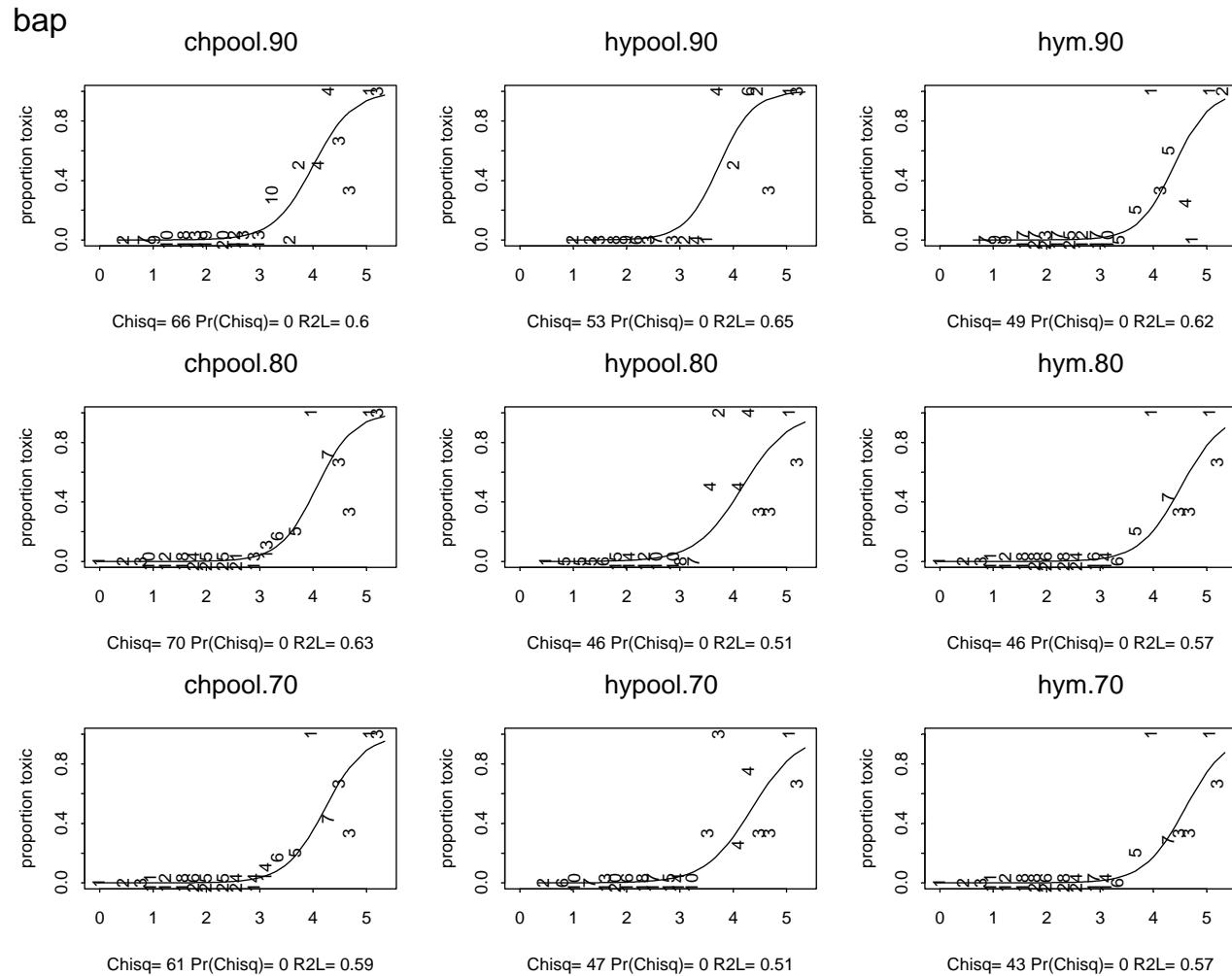


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level (L1 = .90; L2 = .80; L3 = .70).

Figure E-26. Logistic regression model – benzo(a)anthracene

DO NOT QUOTE OR CITE

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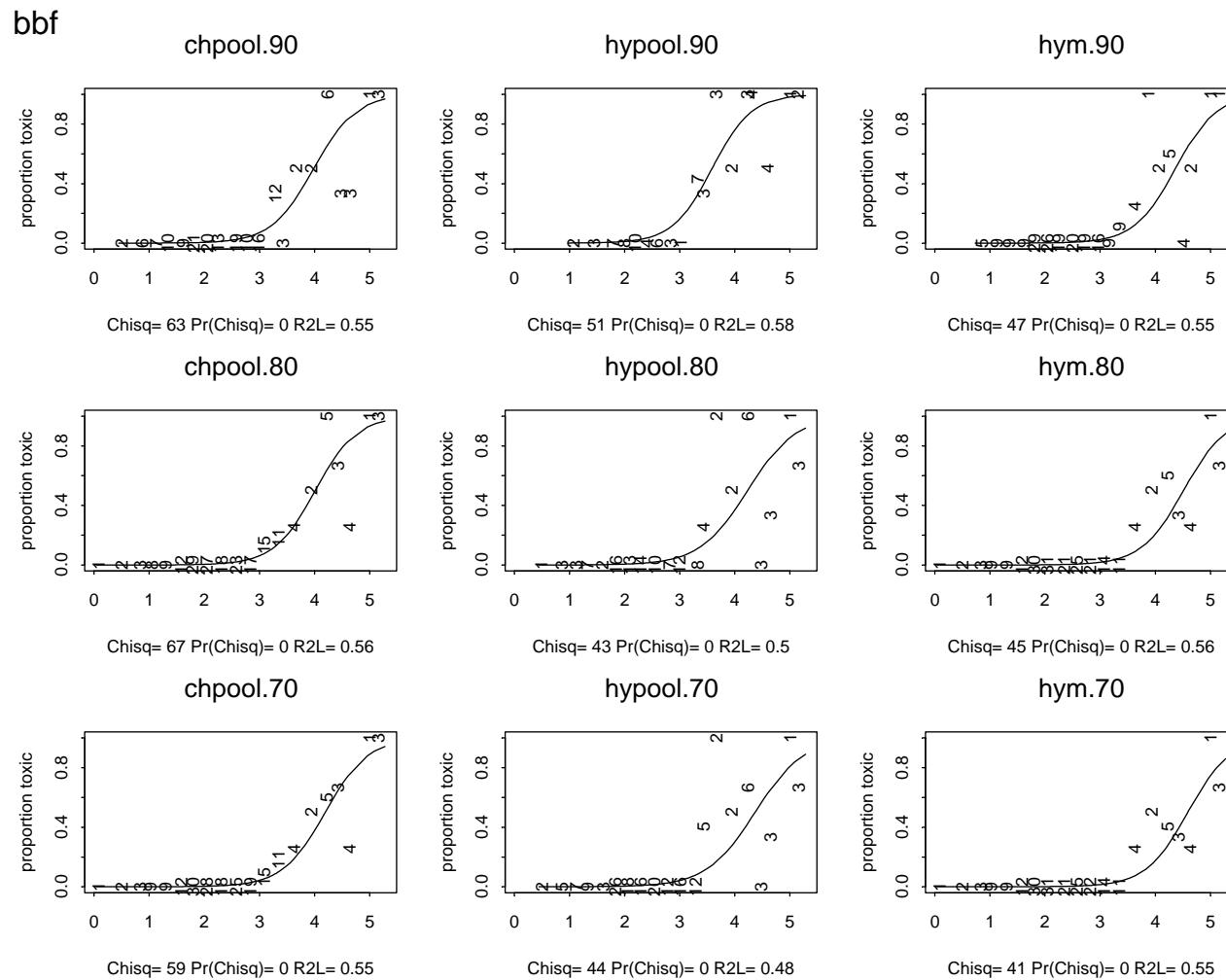


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-27. Logistic regression model – benzo(a)pyrene

DO NOT QUOTE OR CITE

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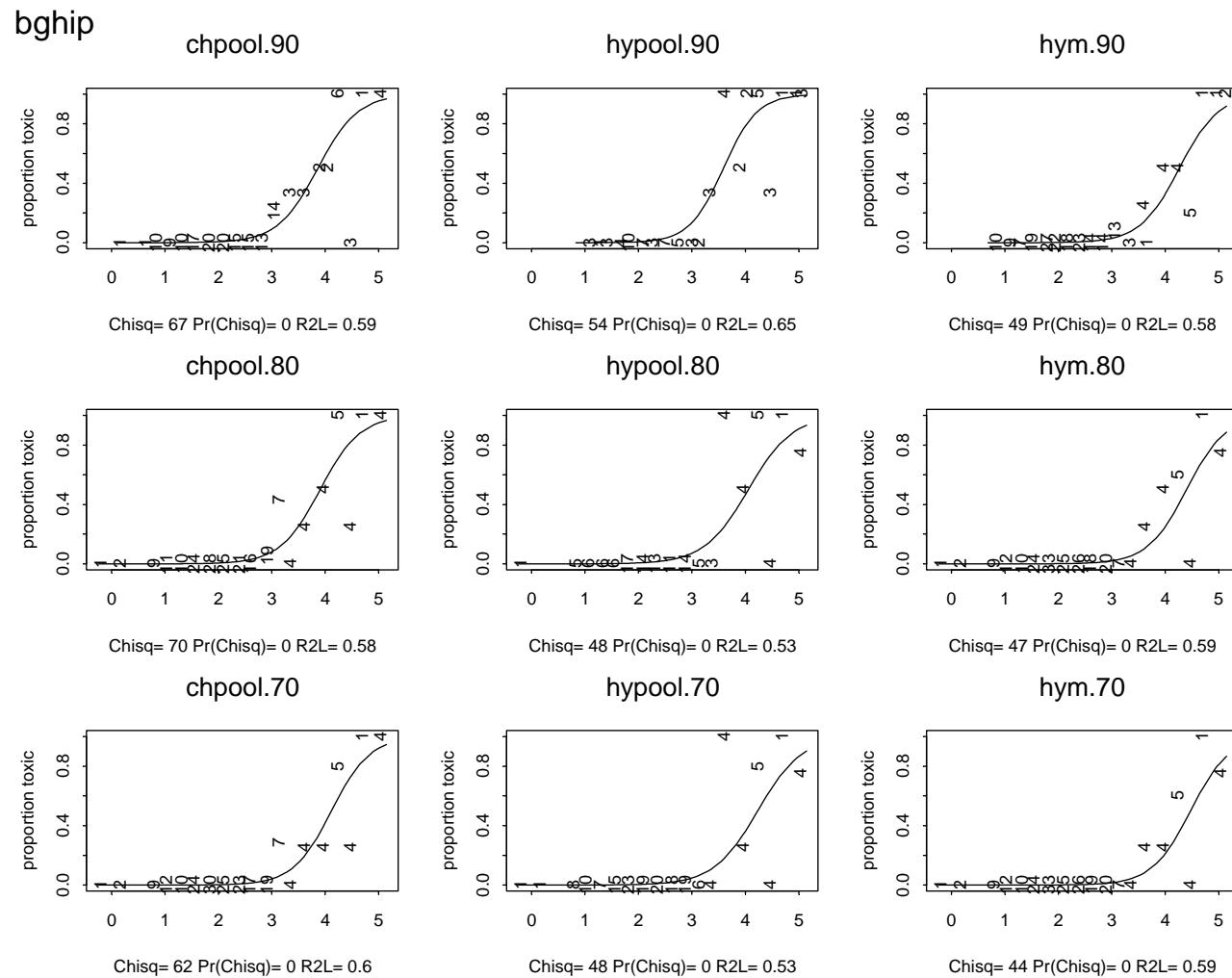


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-28. Logistic regression model – benzo(b)fluoranthene

DO NOT QUOTE OR CITE

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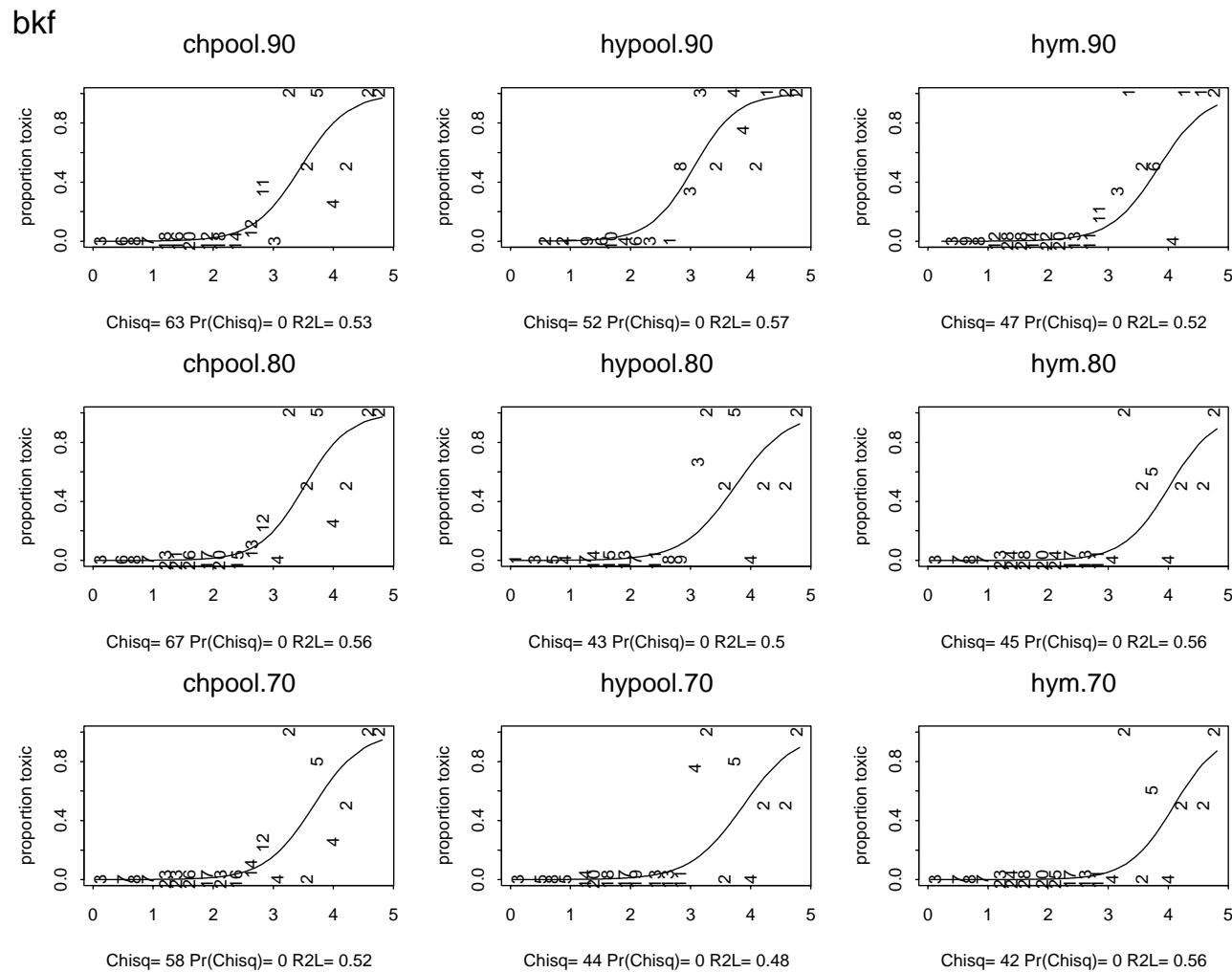


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level (L1 = .90; L2 = .80; L3 = .70).

Figure E-29. Logistic regression model – benzo(ghi)perylene

DO NOT QUOTE OR CITE

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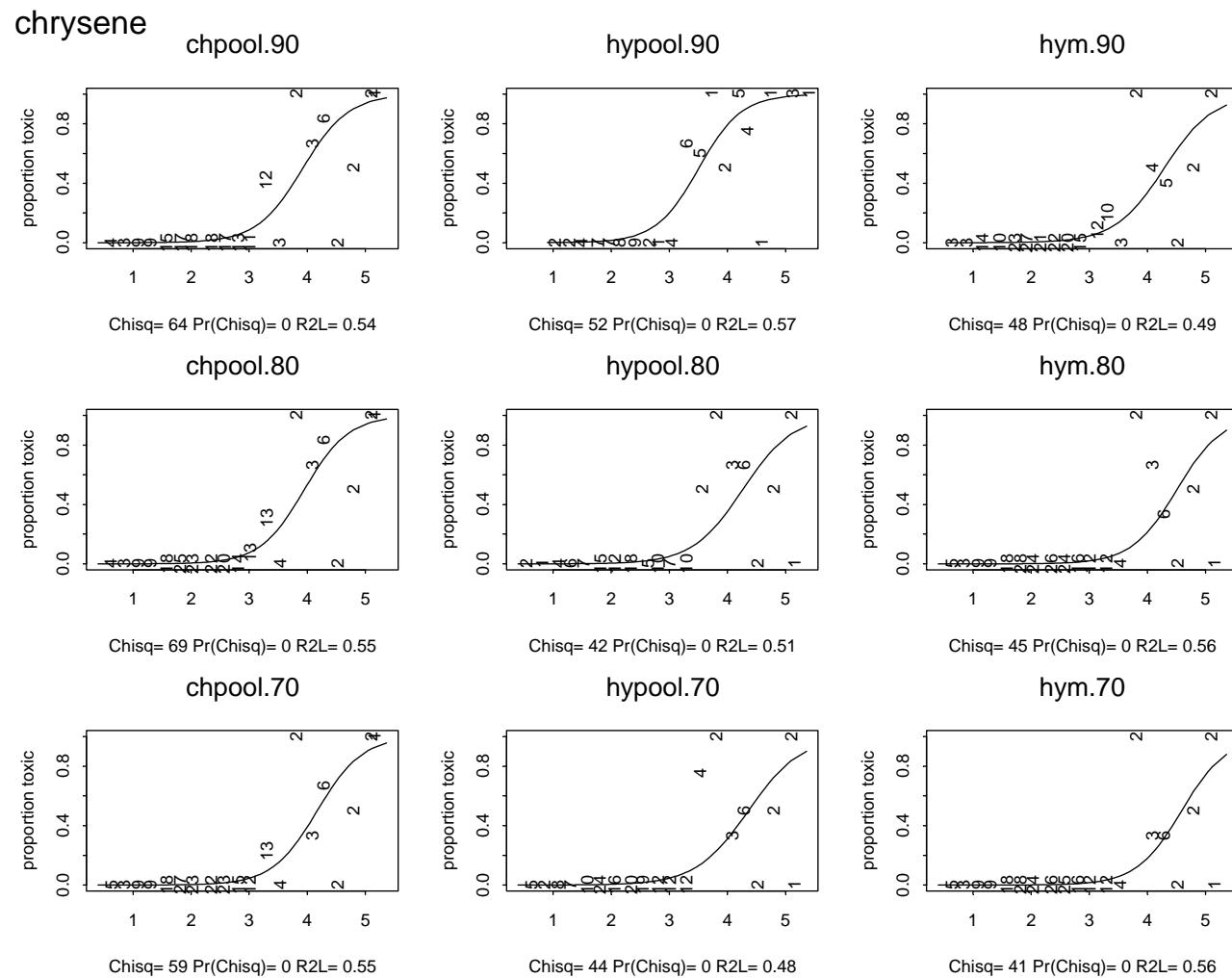


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-30. Logistic regression model – benzo(k)fluoranthene

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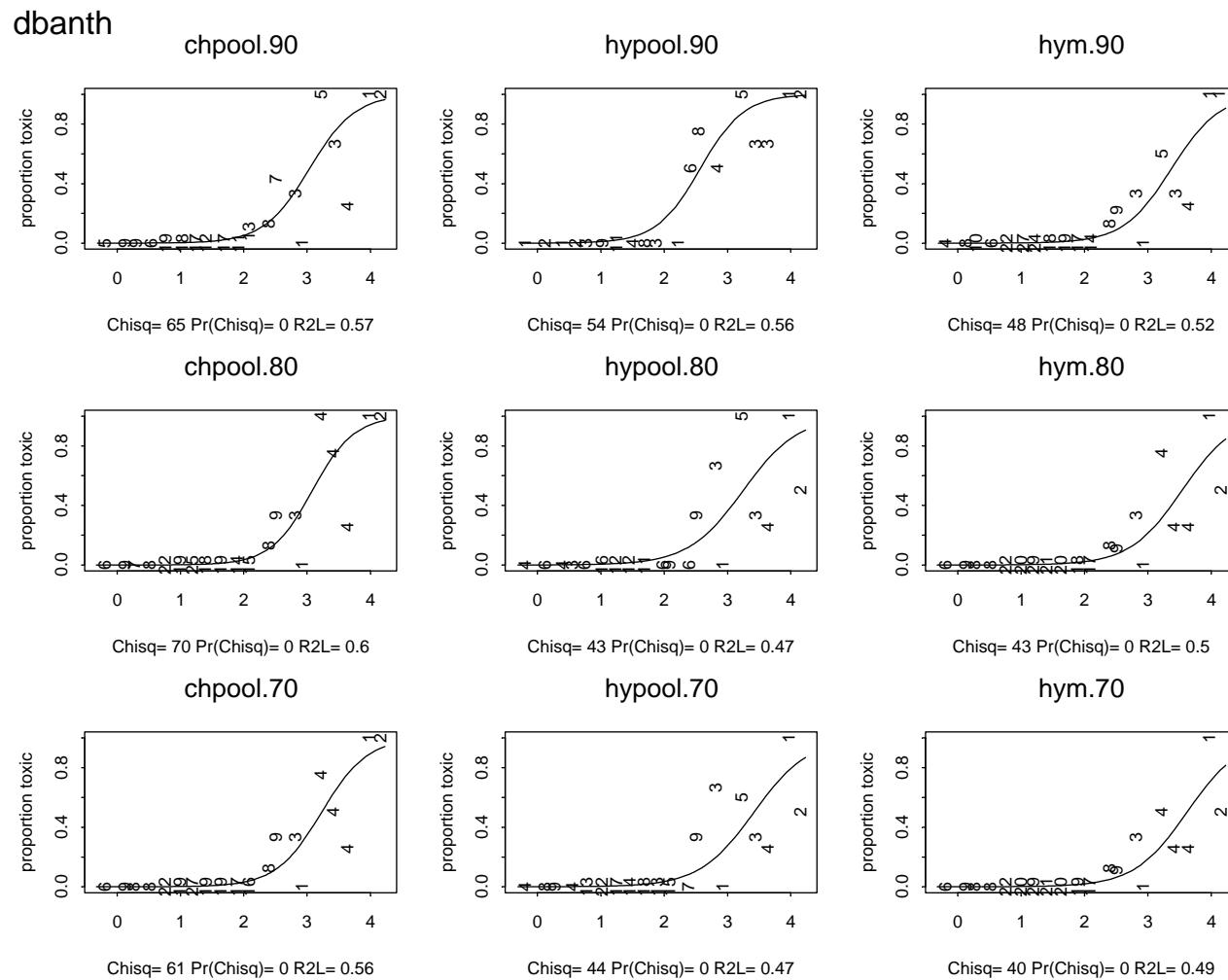


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-31. Logistic regression model – chrysene

DO NOT QUOTE OR CITE

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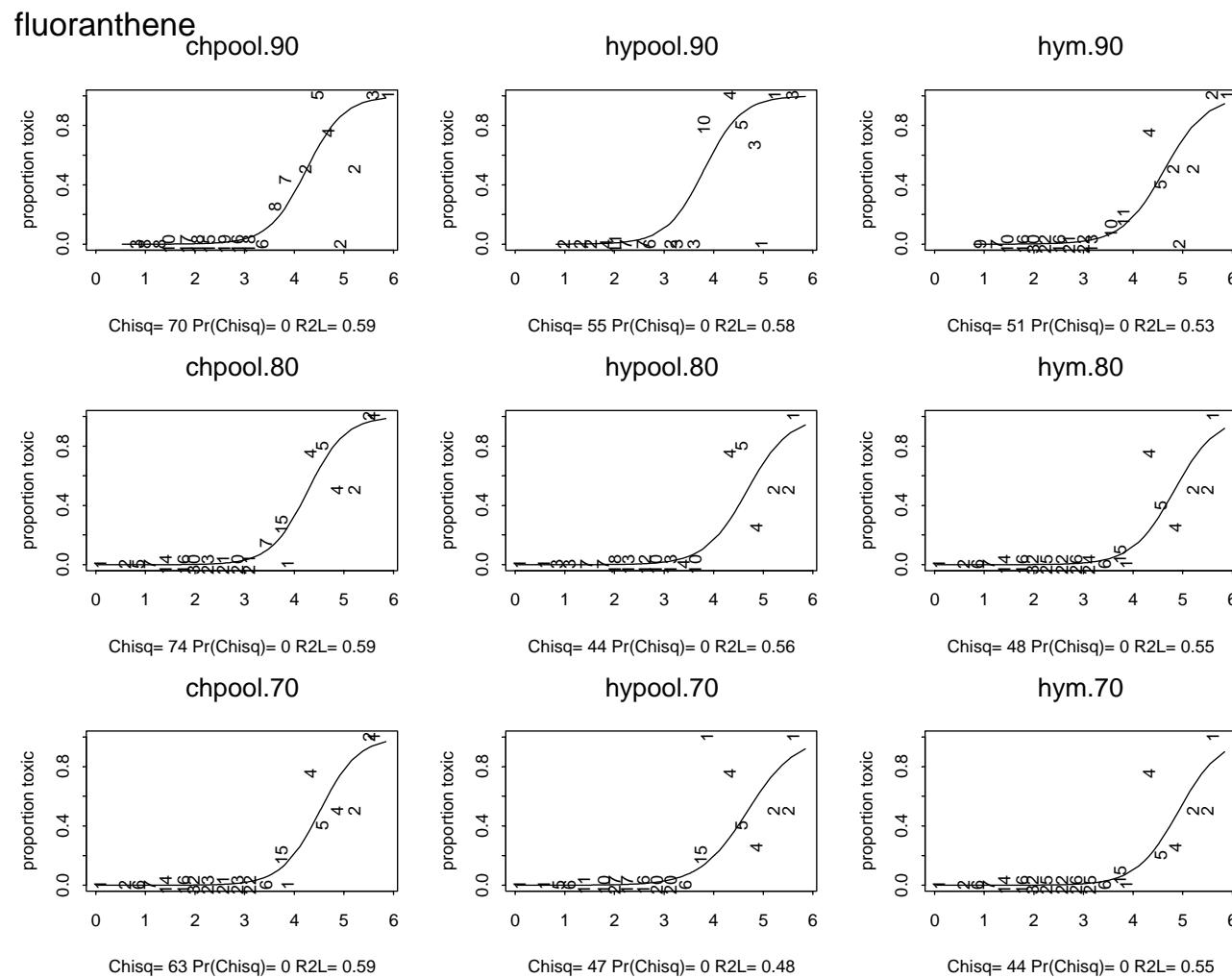


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-32. Logistic regression model – dibenzanthracene

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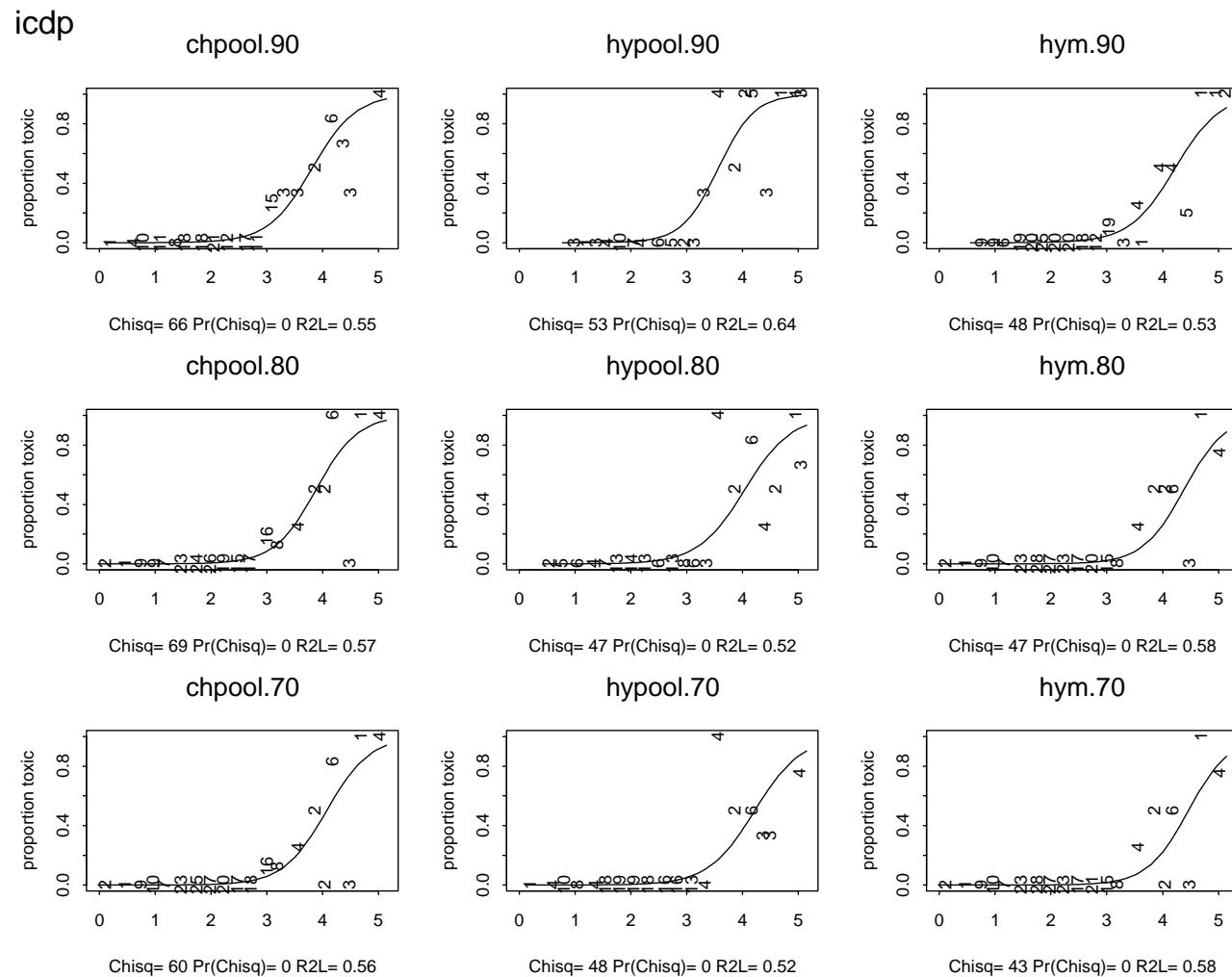


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-33. Logistic regression model – fluoranthene

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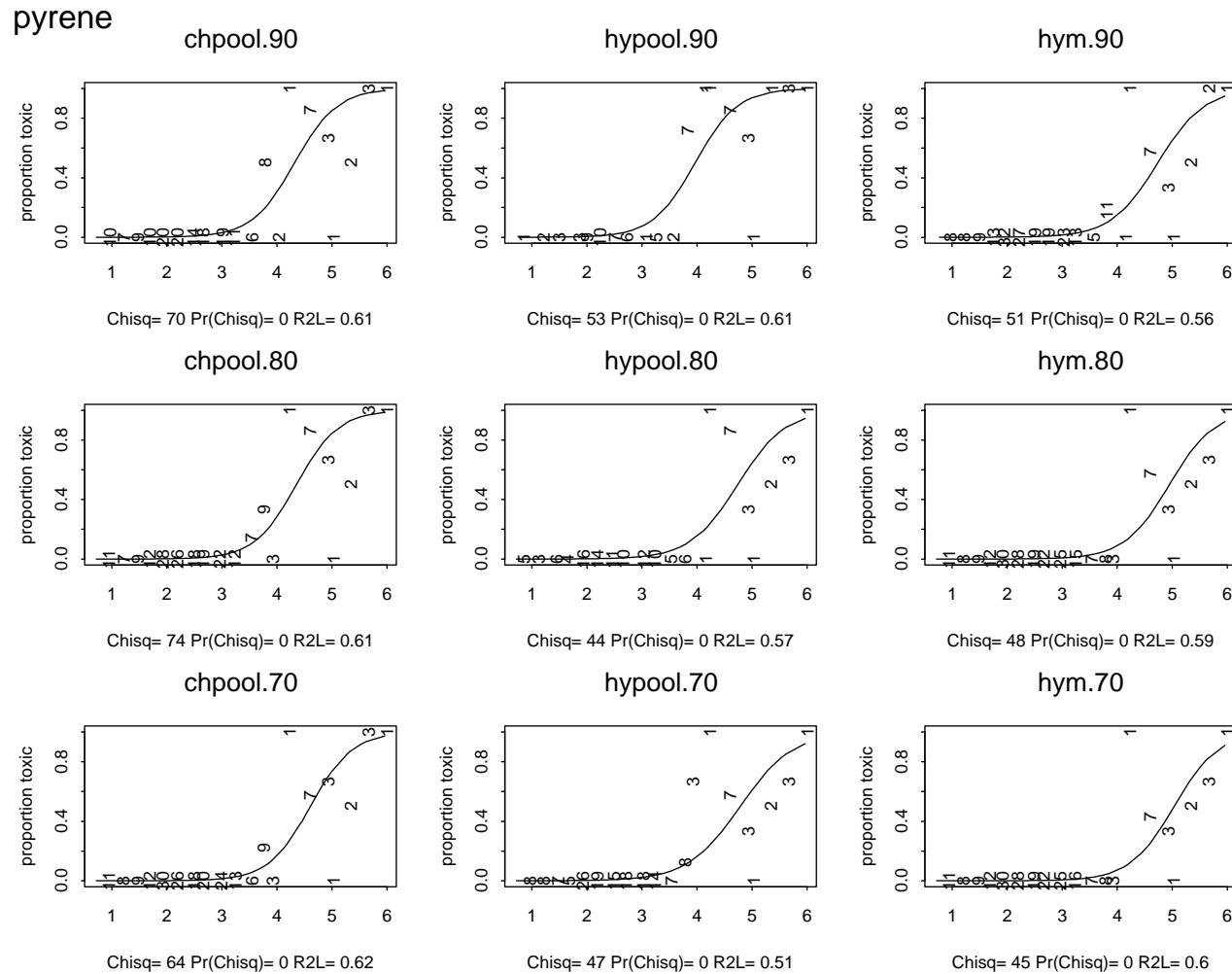


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level (L1 = .90; L2 = .80; L3 = .70).

Figure E-34. Logistic regression model – indeno(c,d)pyrene

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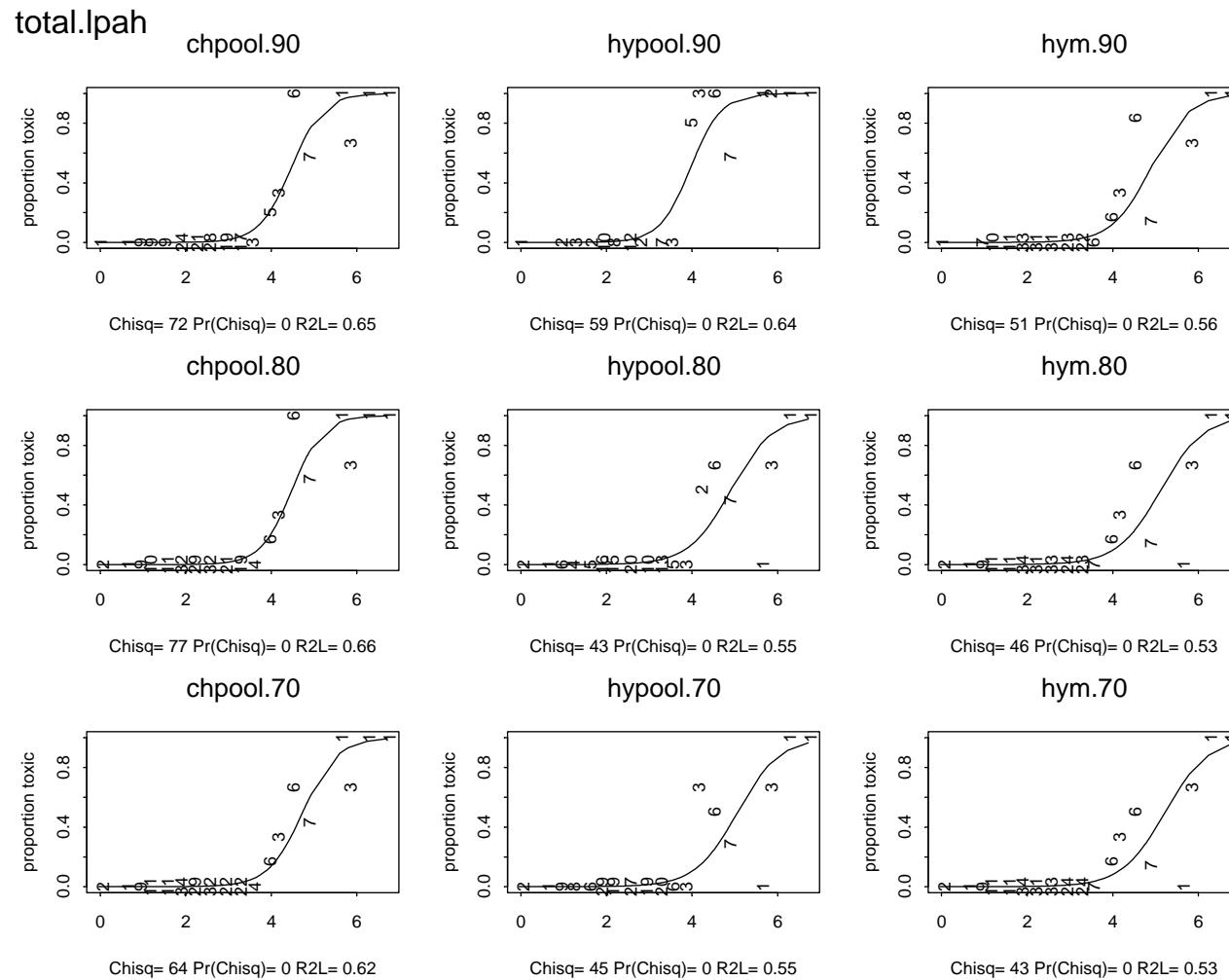


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-35. Logistic regression model – pyrene

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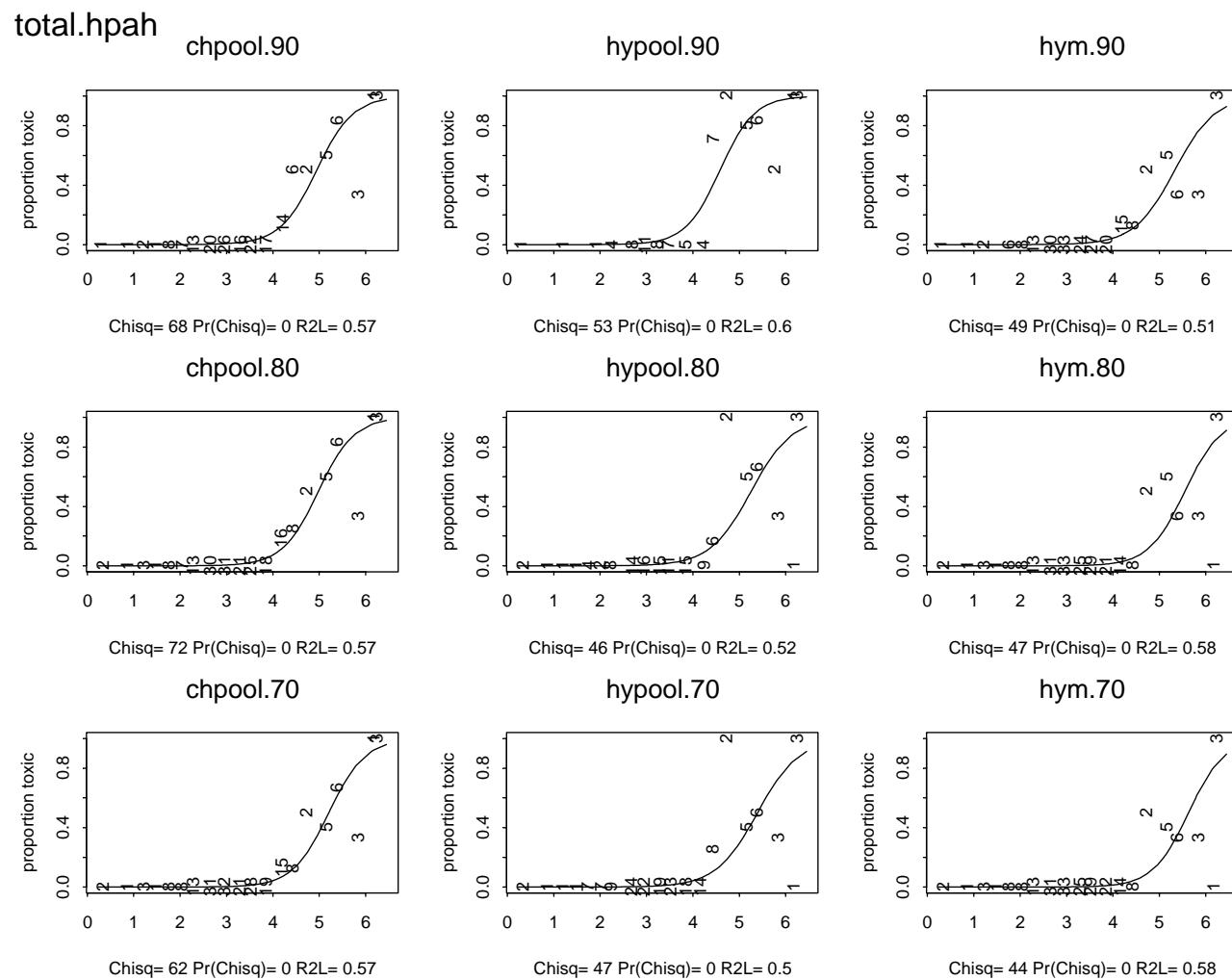


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-36. Logistic regression model – total LPAH

DO NOT QUOTE OR CITE

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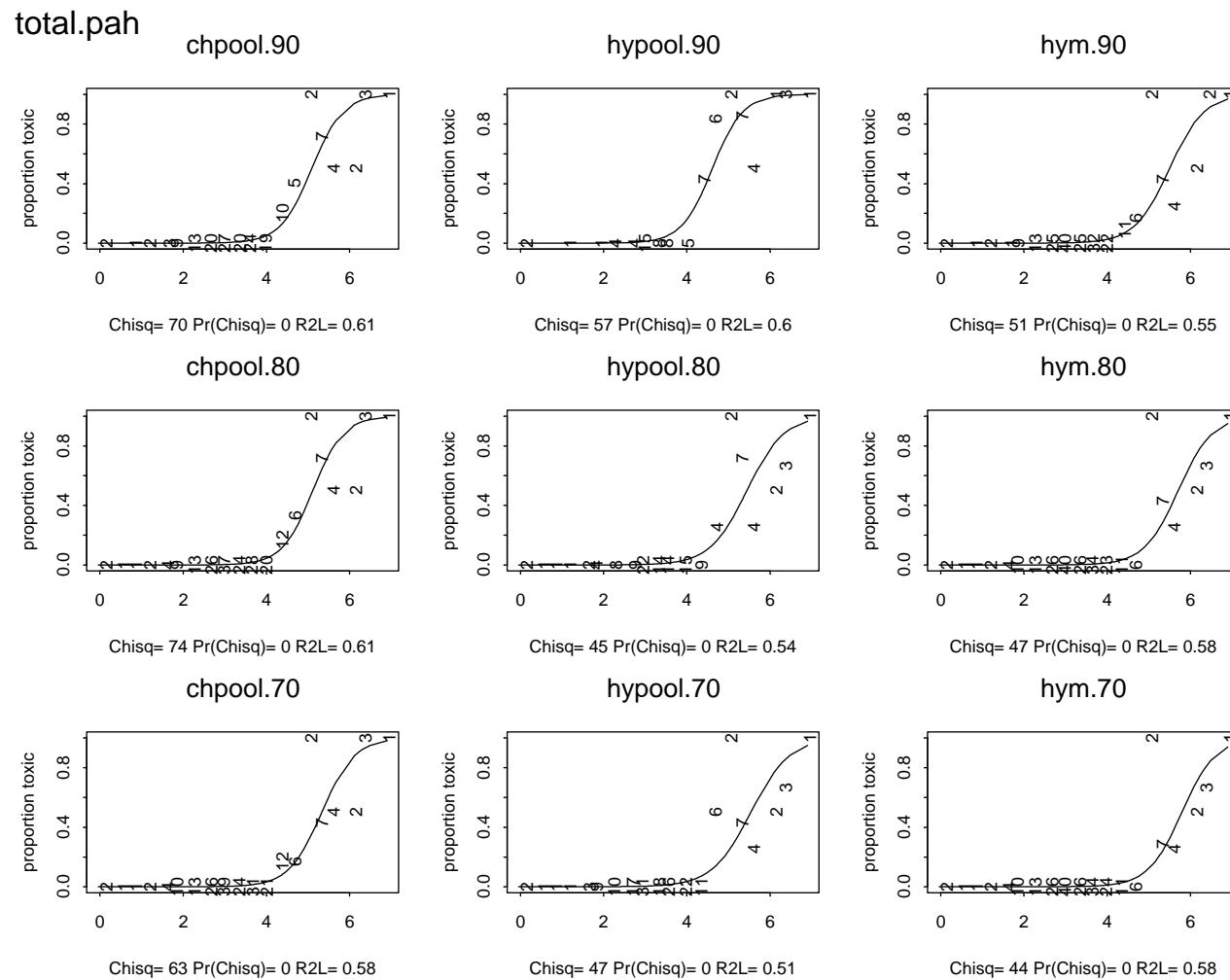


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-37. Logistic regression model – total HPAH

DO NOT QUOTE OR CITE

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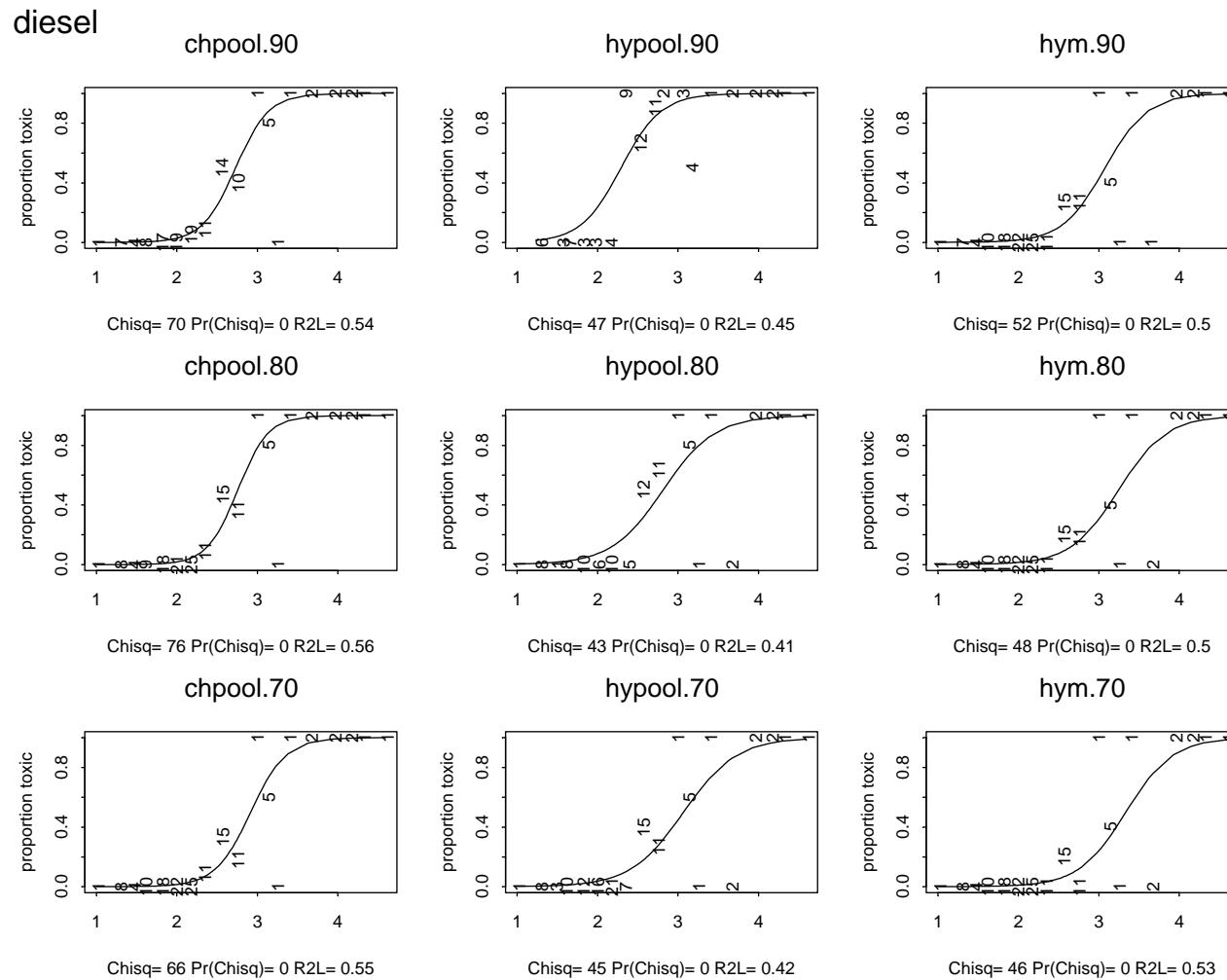


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-38. Logistic regression model – total PAH

DO NOT QUOTE OR CITE

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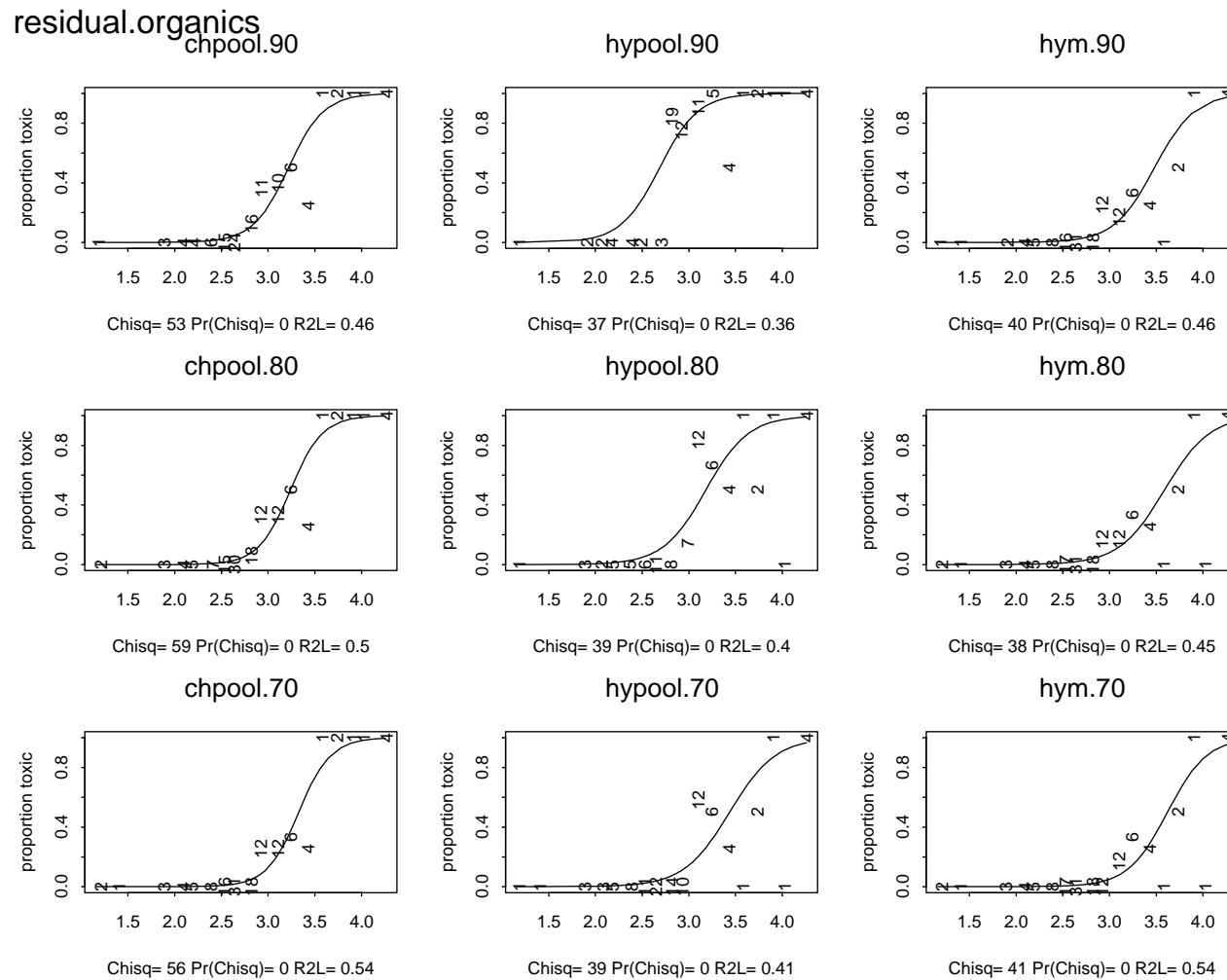


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-39. Logistic regression model – diesel-range hydrocarbons

DO NOT QUOTE OR CITE

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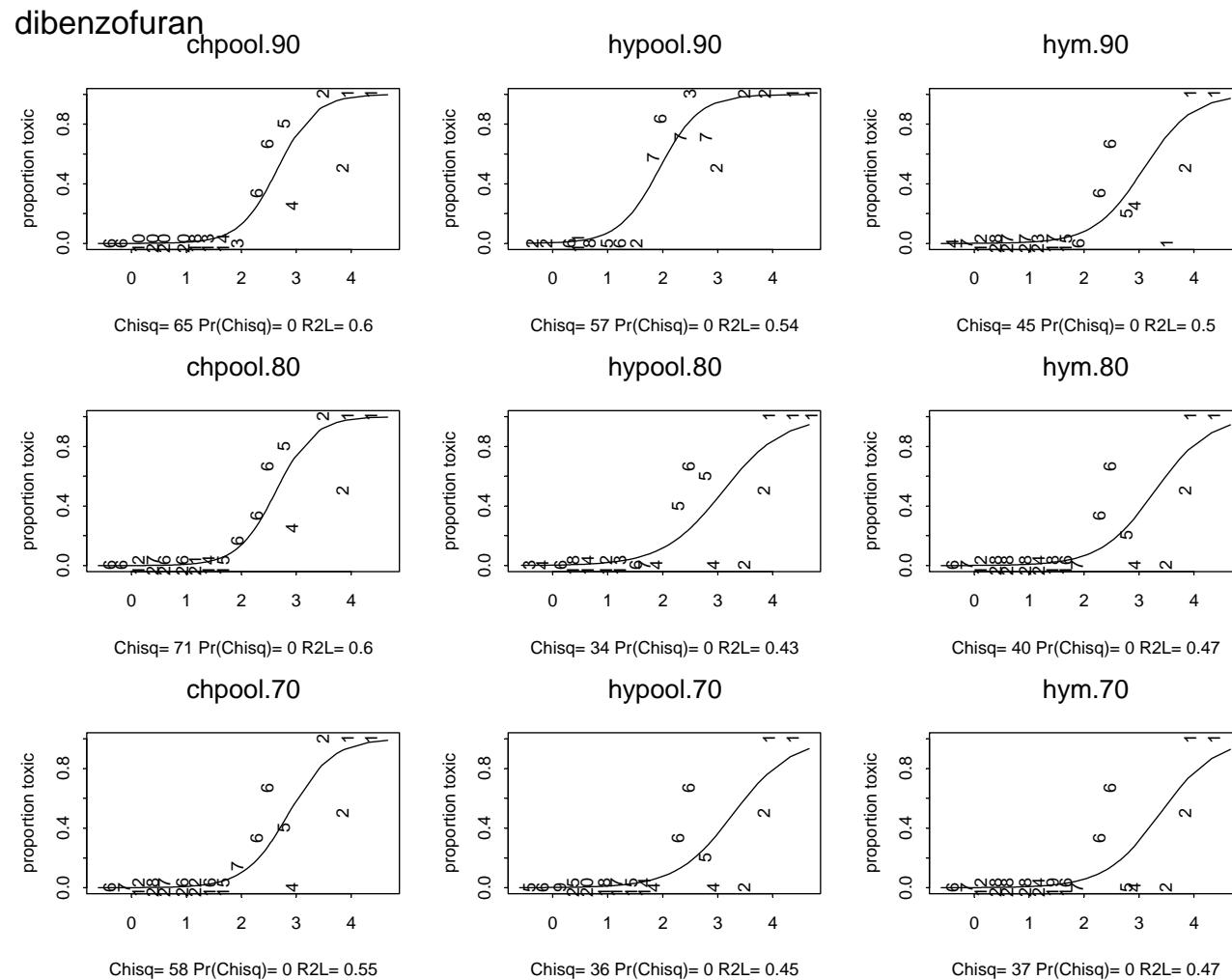


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-40. Logistic regression model – residual-range hydrocarbons

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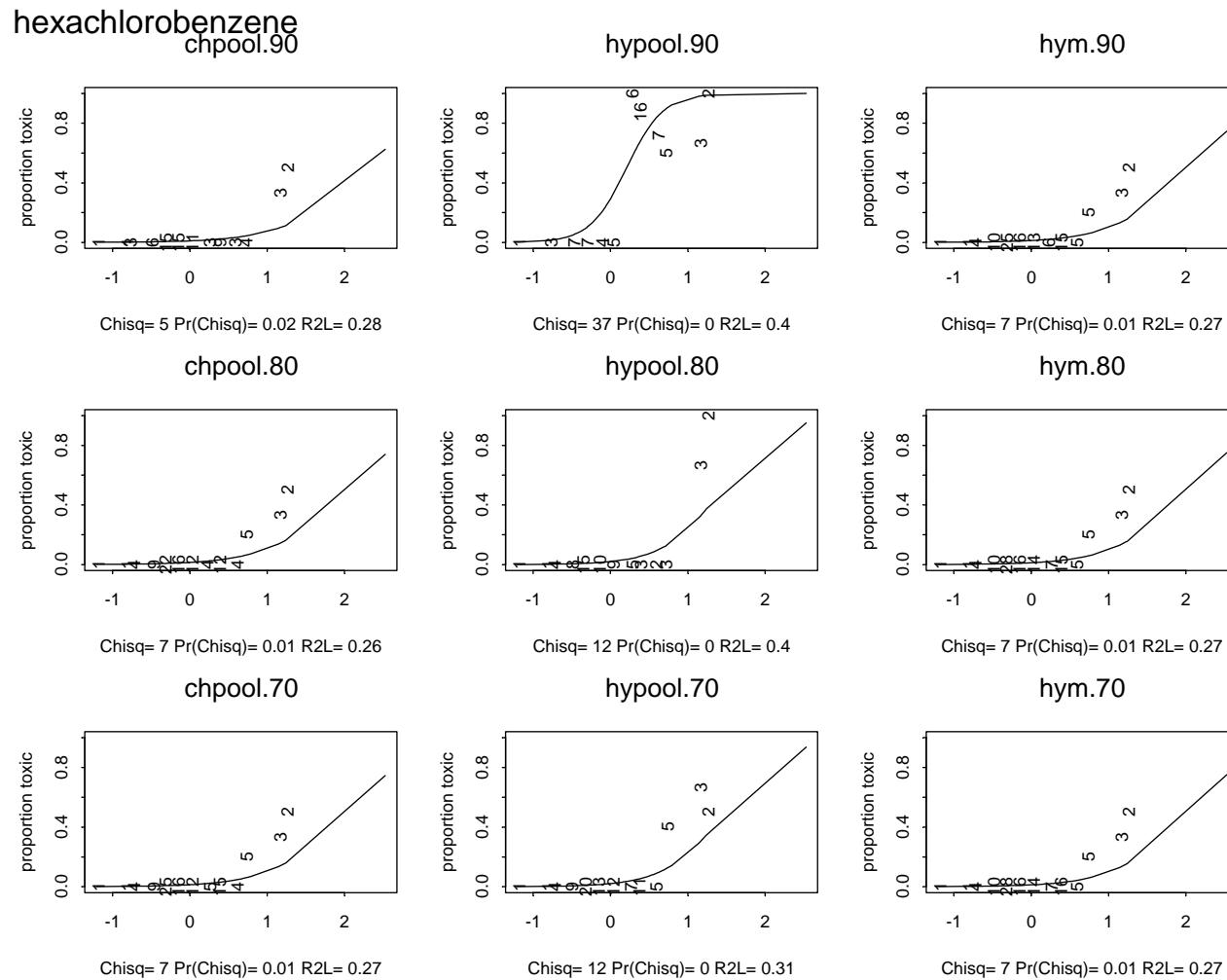


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-41. Logistic regression model – dibenzofuran

DO NOT QUOTE OR CITE

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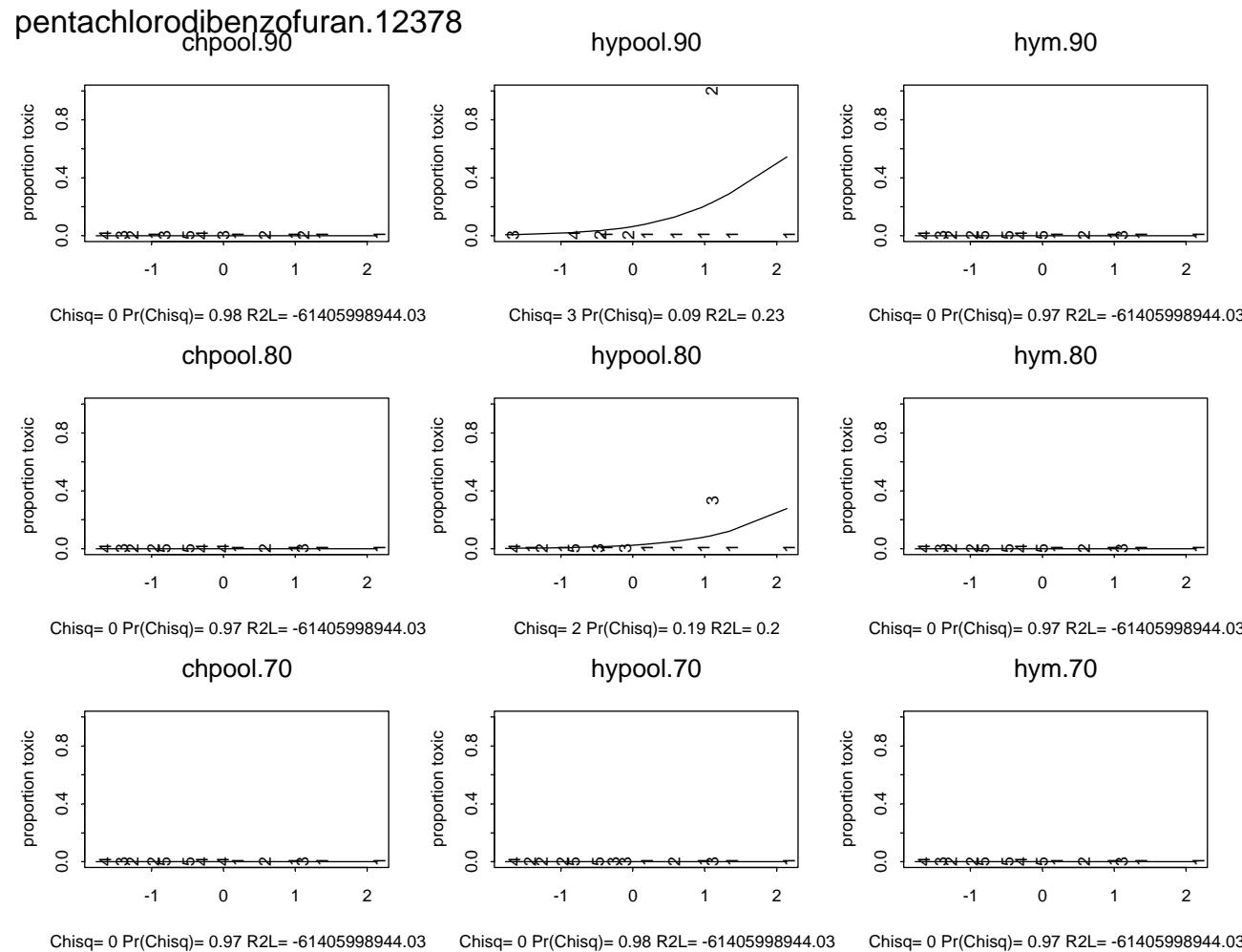


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-42. Logistic regression model – hexachlorobenzene

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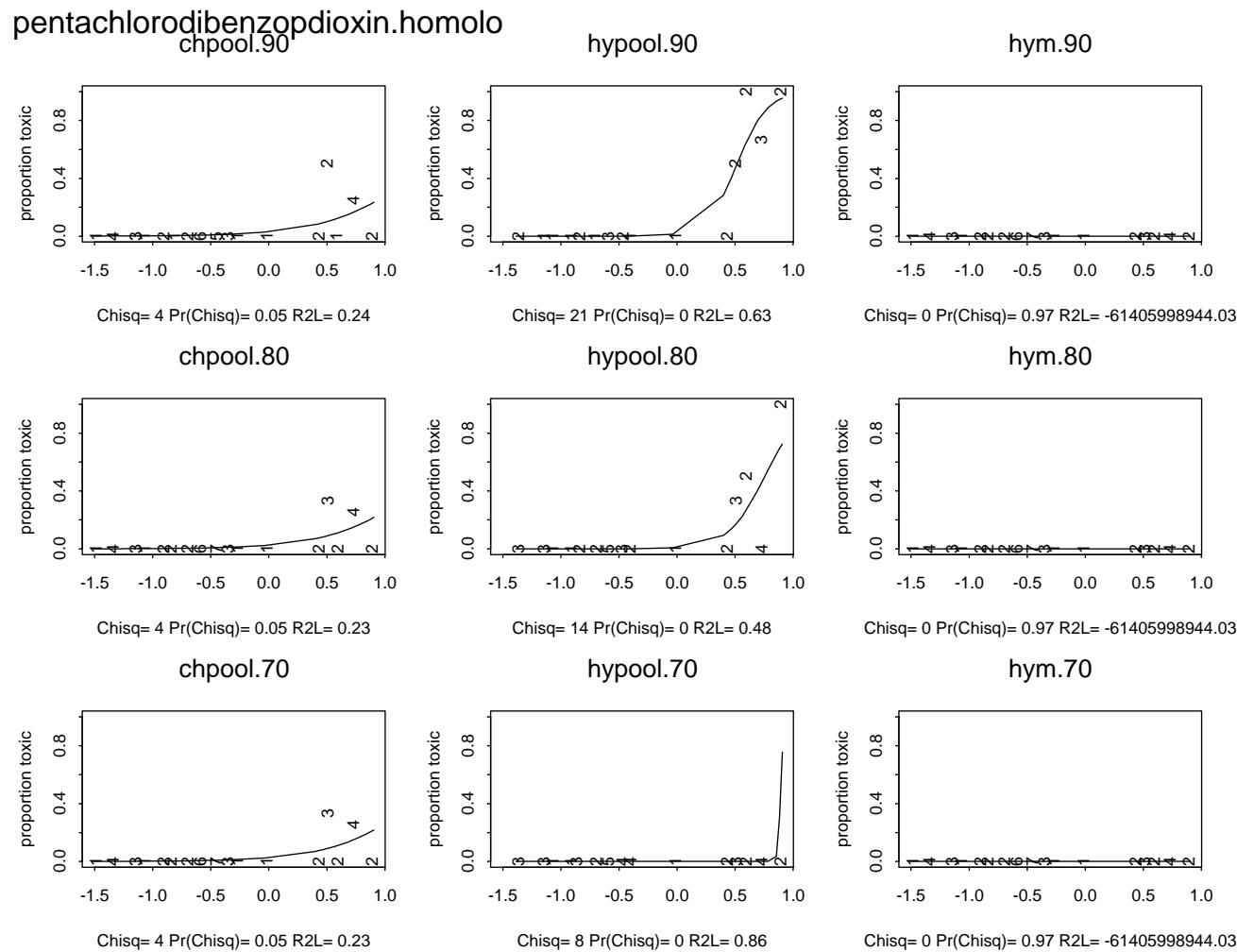


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level (L1 = .90; L2 = .80; L3 = .70).

Figure E-43. Logistic regression model – 1,2,3,7,8-pentachlorodibenzofuran

DO NOT QUOTE OR CITE

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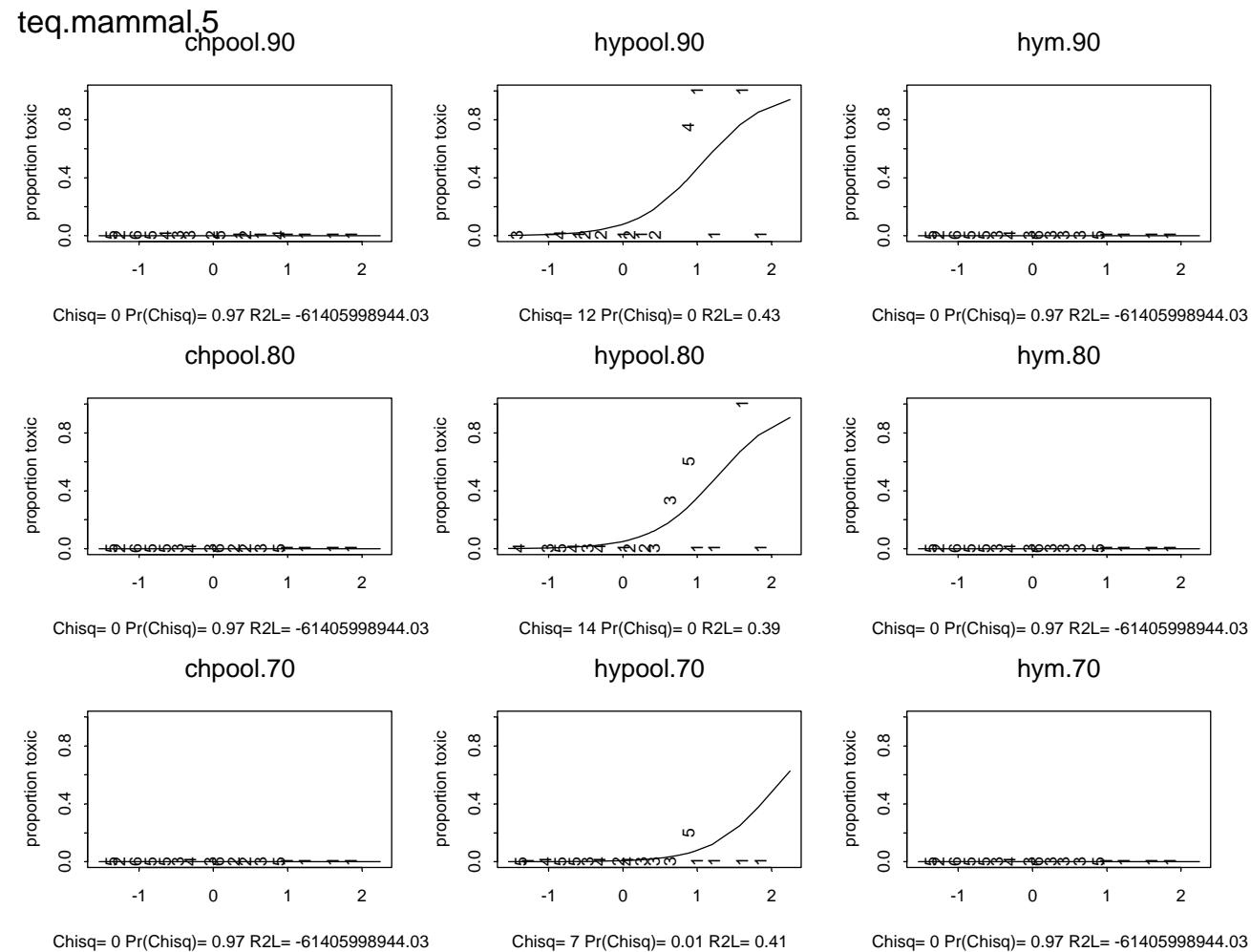


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level (L1 = .90; L2 = .80; L3 = .70).

Figure E-44. Logistic regression model – pentachlorodibenzo-p-dioxin homologs

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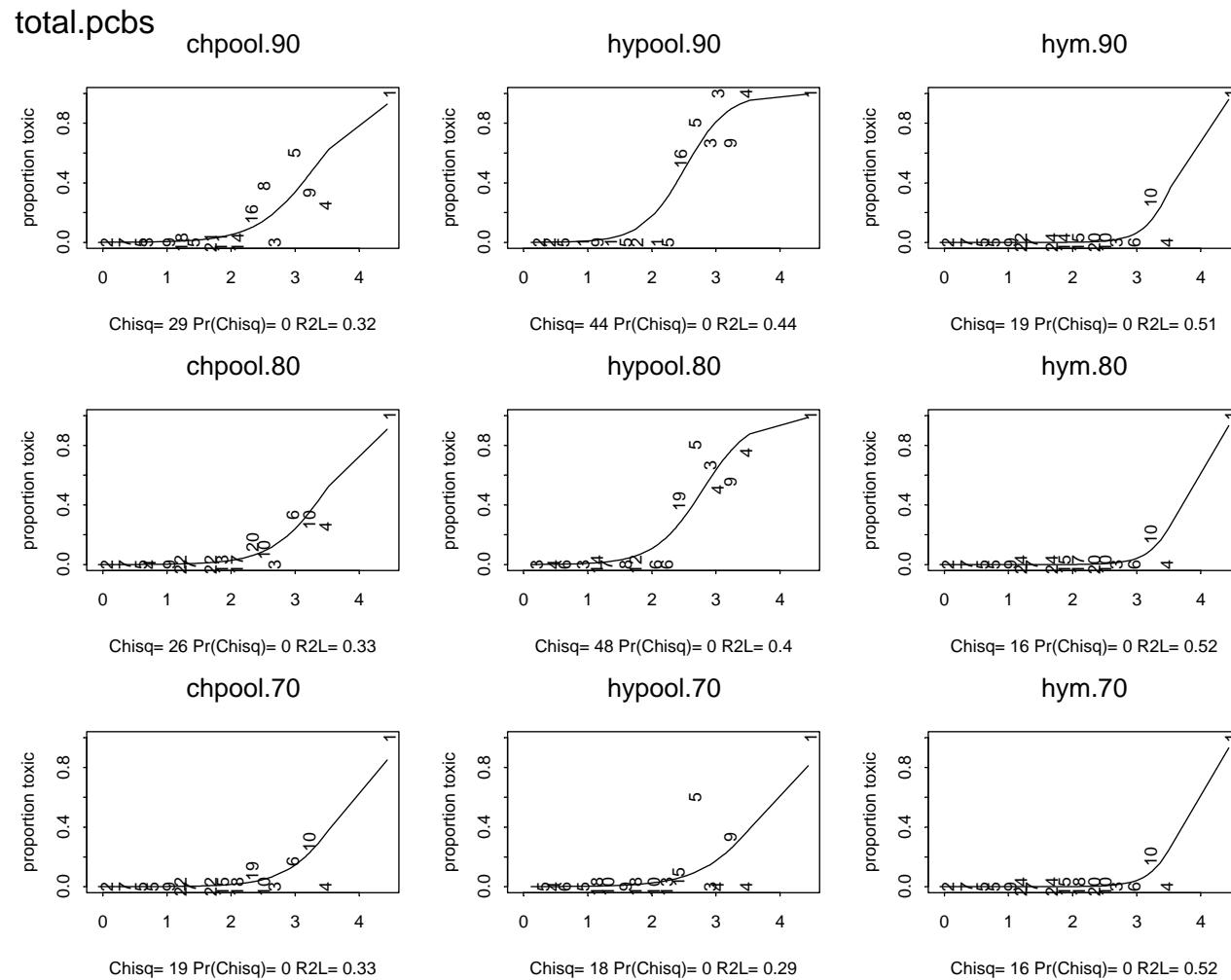


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-45. Logistic regression model – TEQ mammal (0.5 detection limit)

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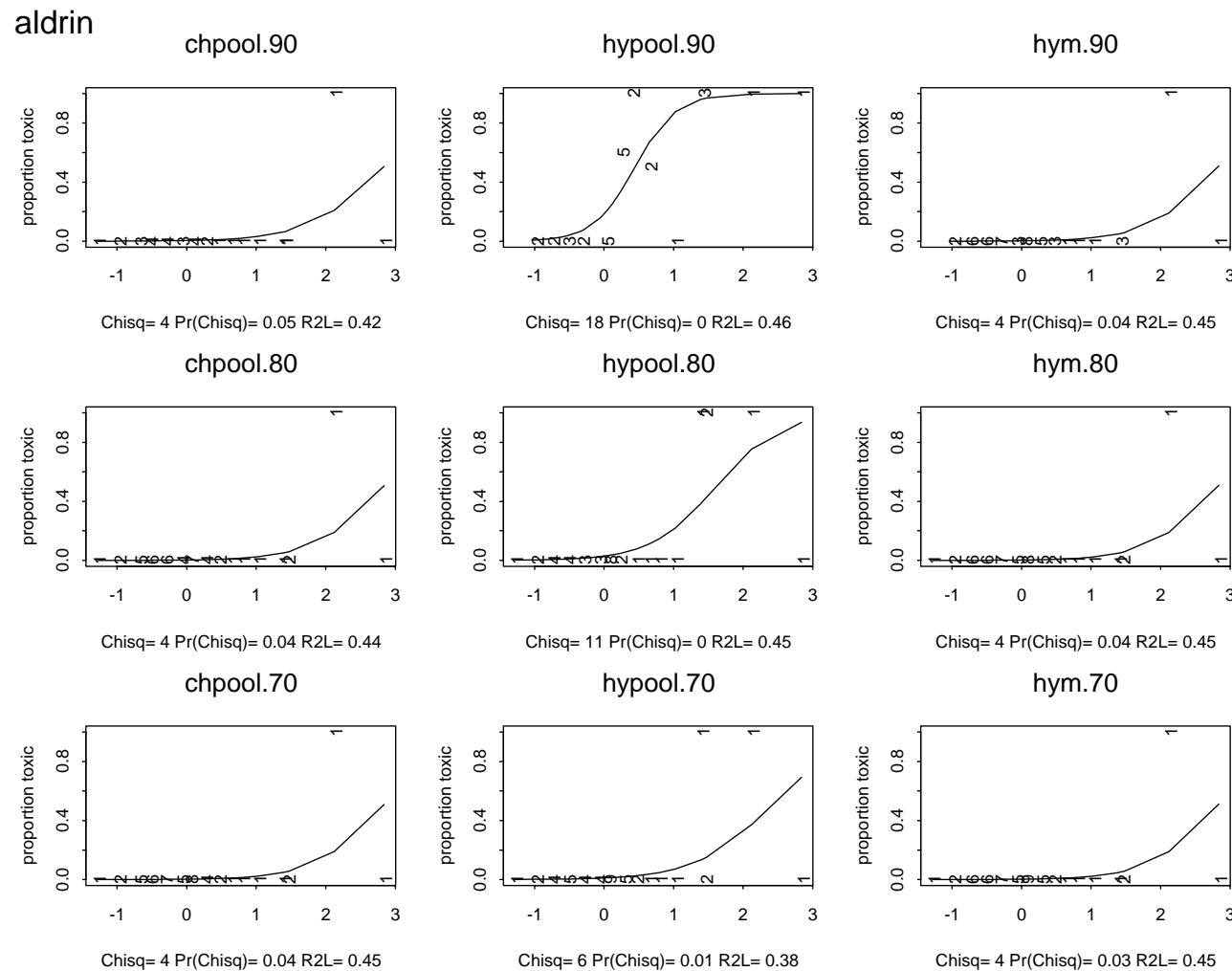


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-46. Logistic regression model – total PCBs

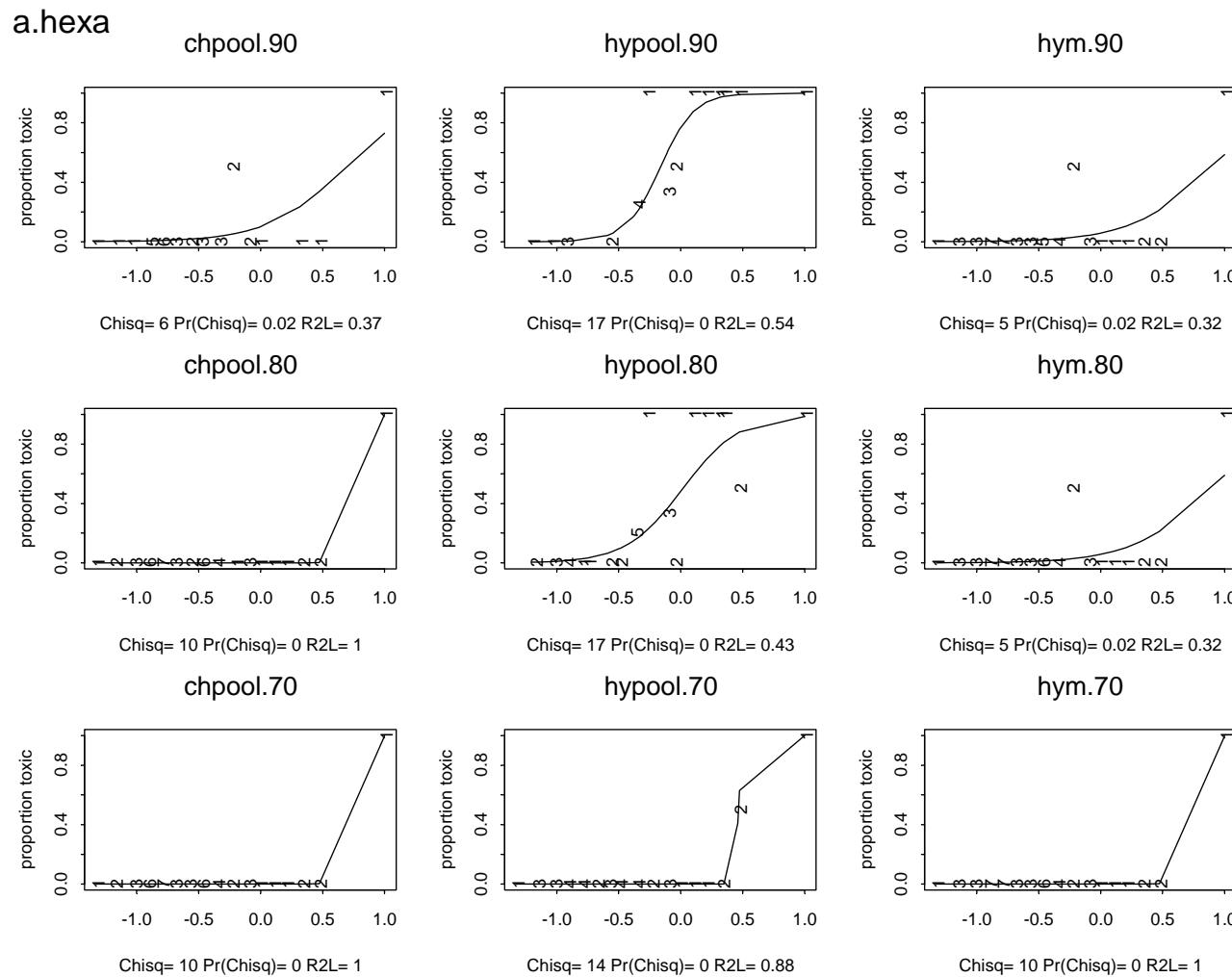
DO NOT QUOTE OR CITE

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Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level (L1 = .90; L2 = .80; L3 = .70).

Figure E-47. Logistic regression model – aldrin

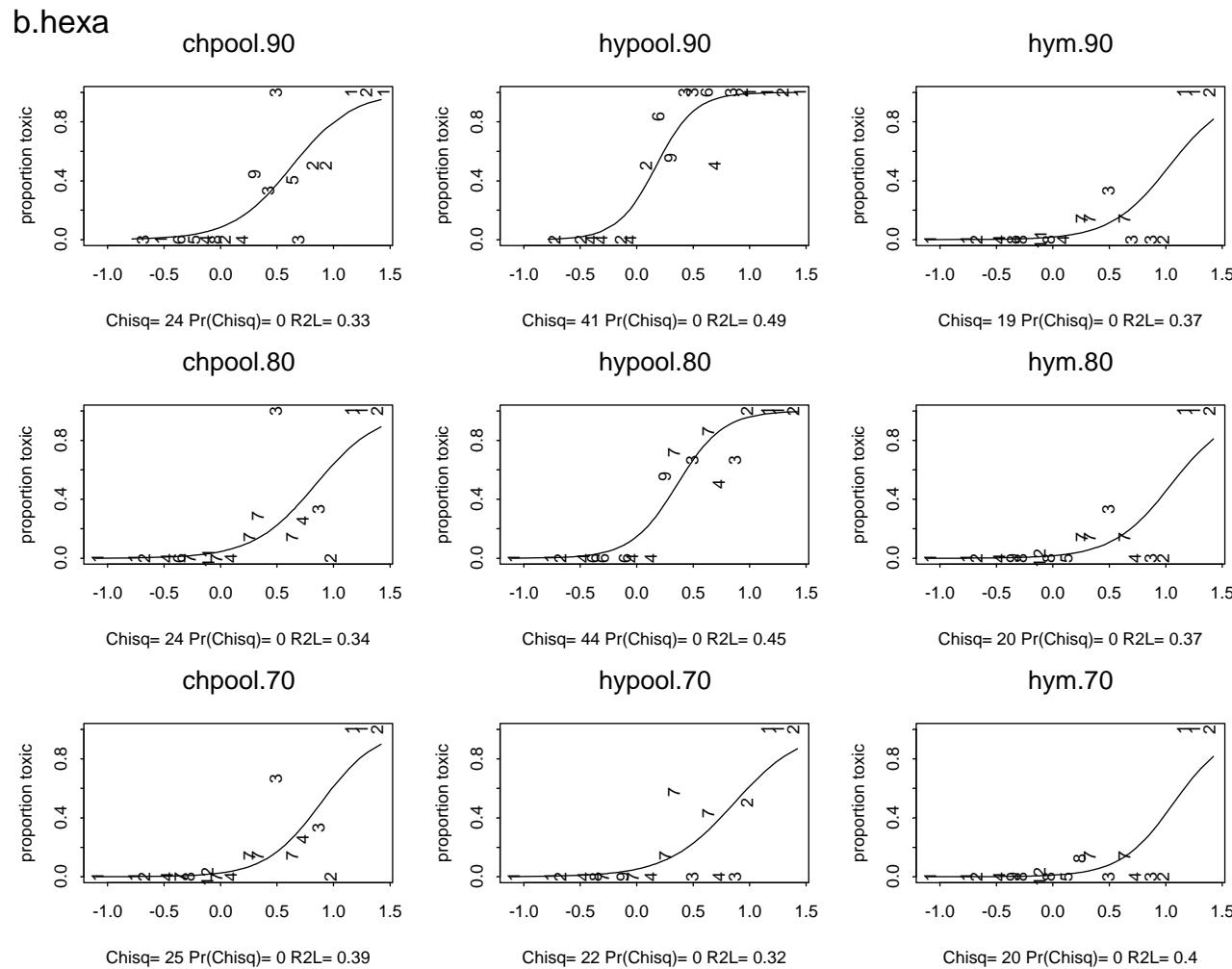


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-48. Logistic regression model – alpha-hexachlorocyclohexane

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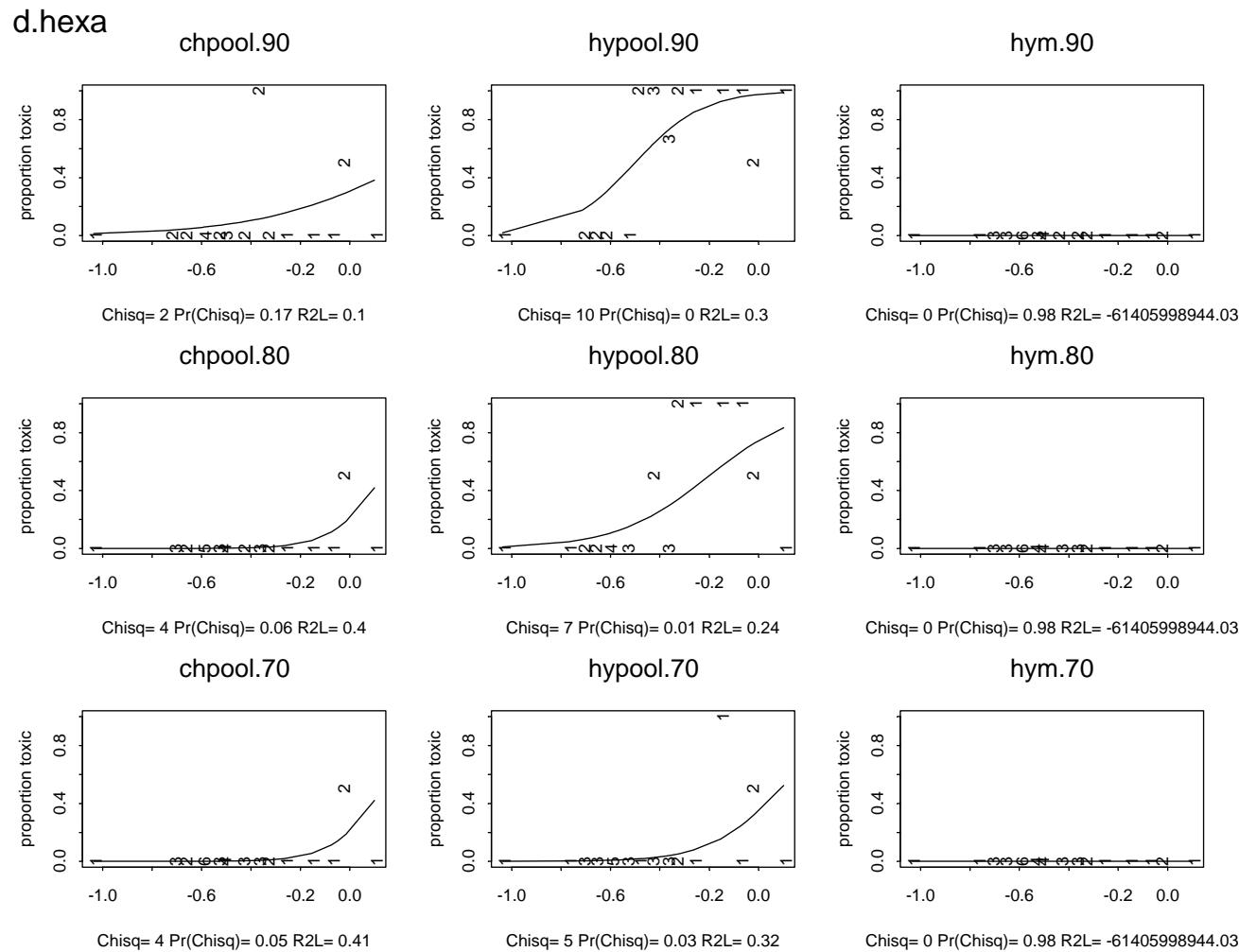


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-49. Logistic regression model – beta-hexachlorocyclohexane

DO NOT QUOTE OR CITE

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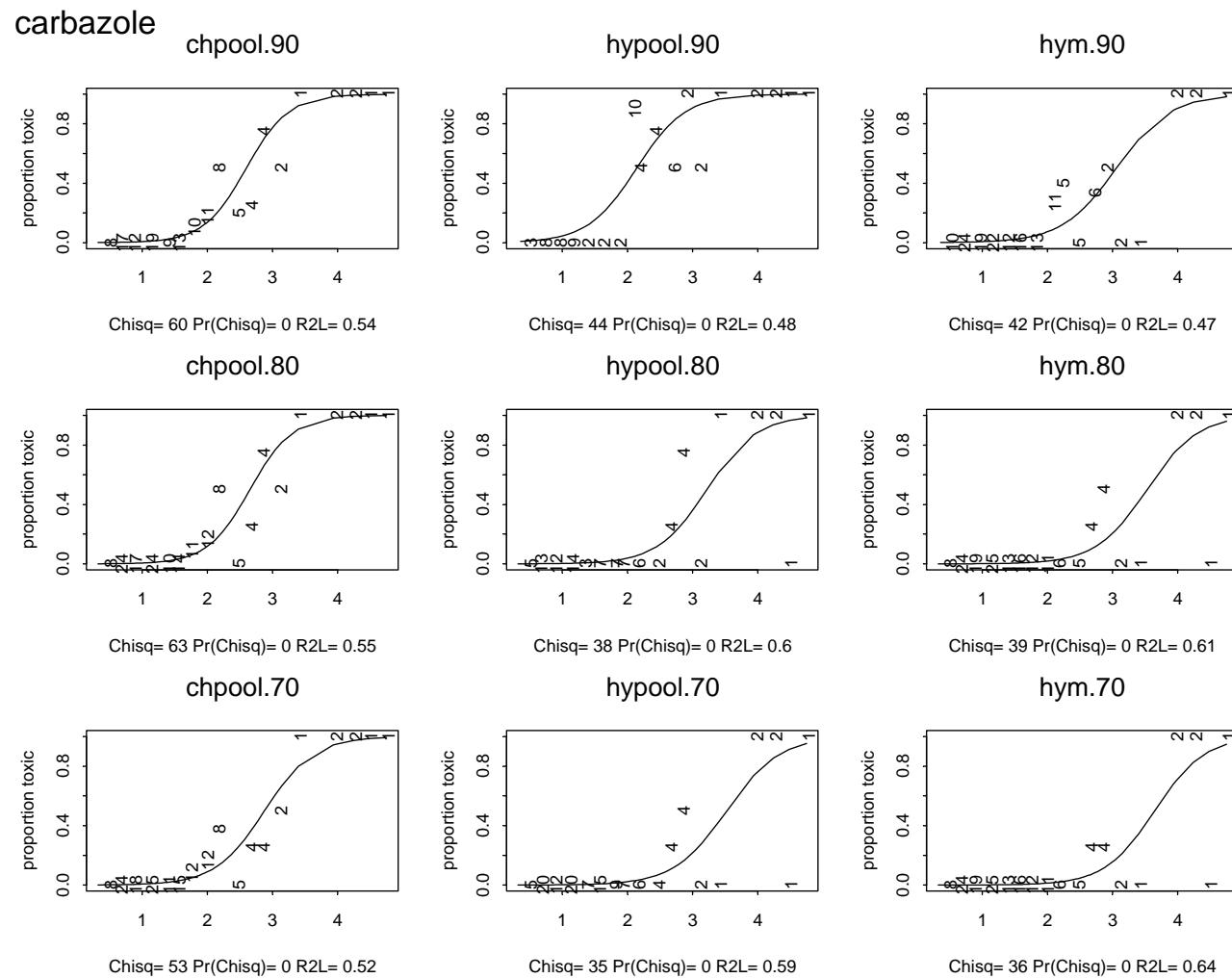


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-50. Logistic regression model – delta-hexachlorocyclohexane

DO NOT QUOTE OR CITE

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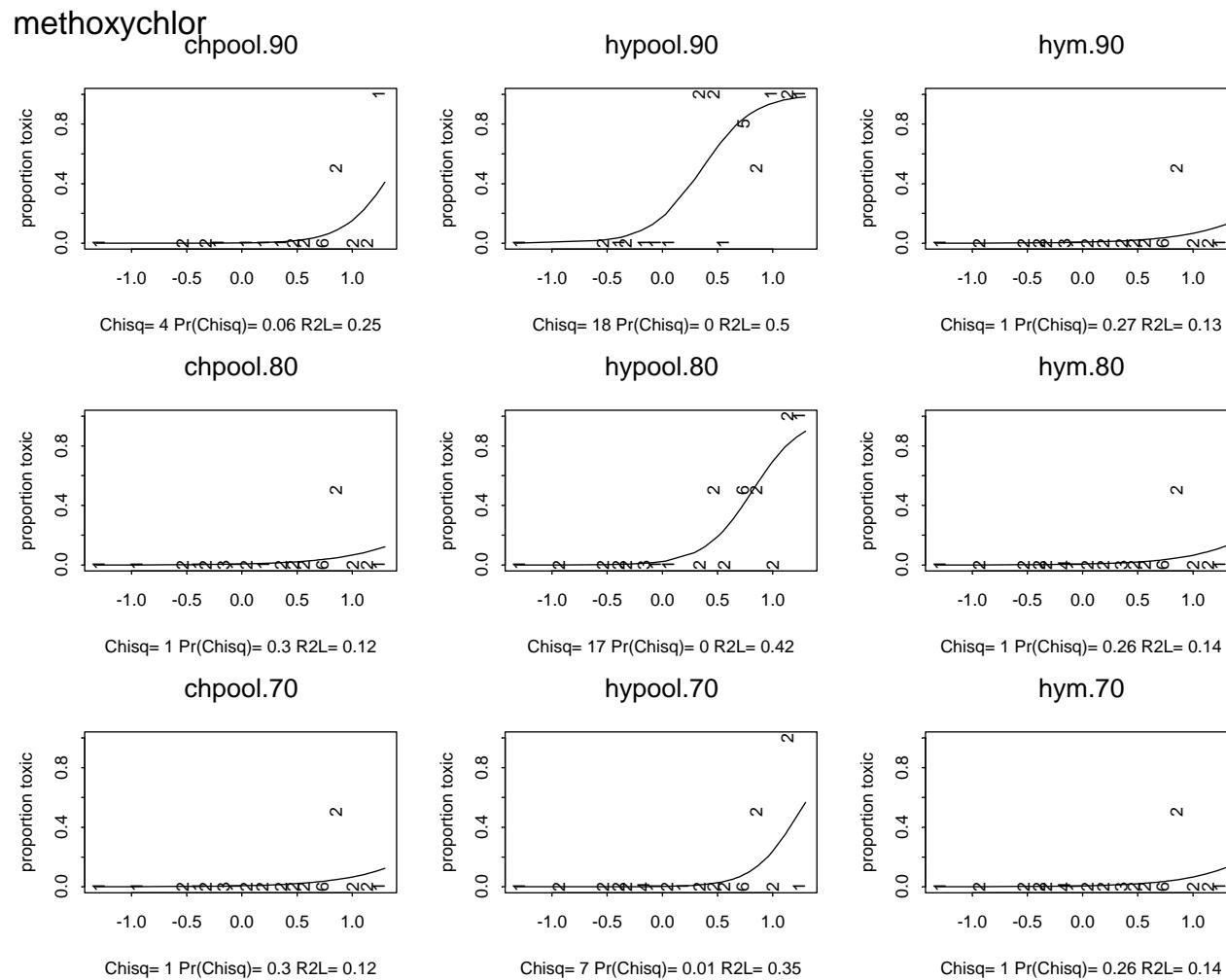


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-51. Logistic regression model – carbazole

DO NOT QUOTE OR CITE

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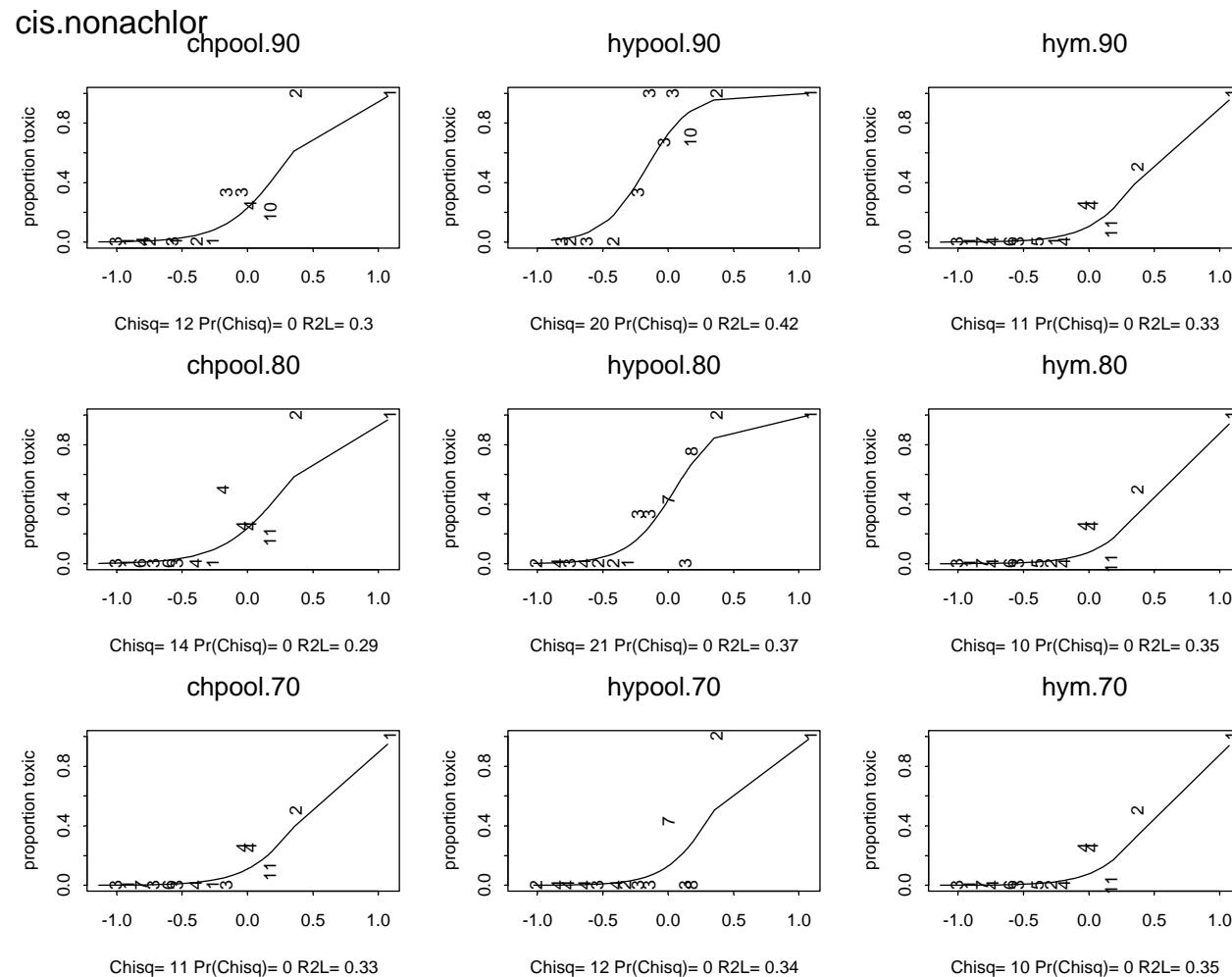


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-52. Logistic regression model – methoxychlor

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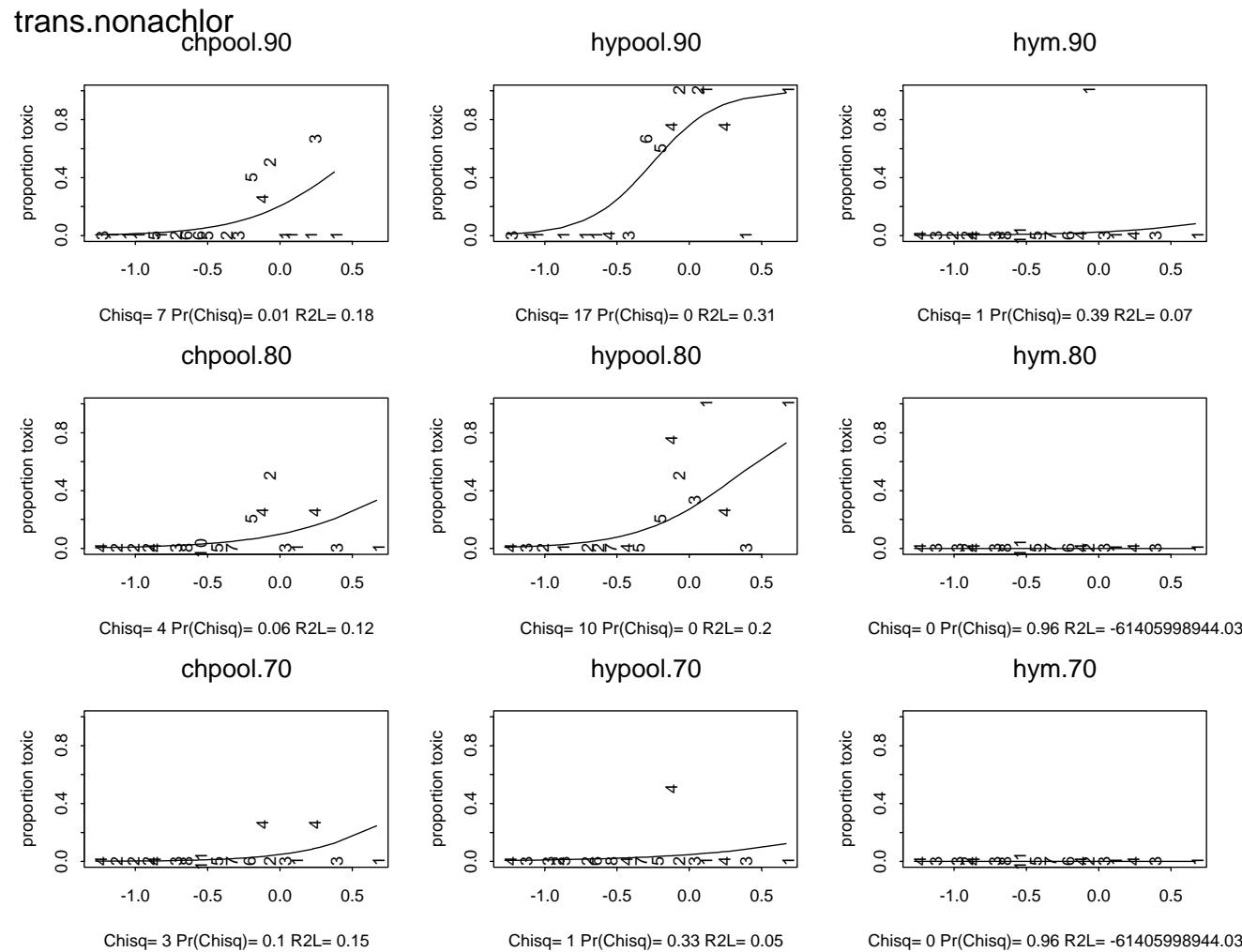


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-53. Logistic regression model – cis-nonachlor

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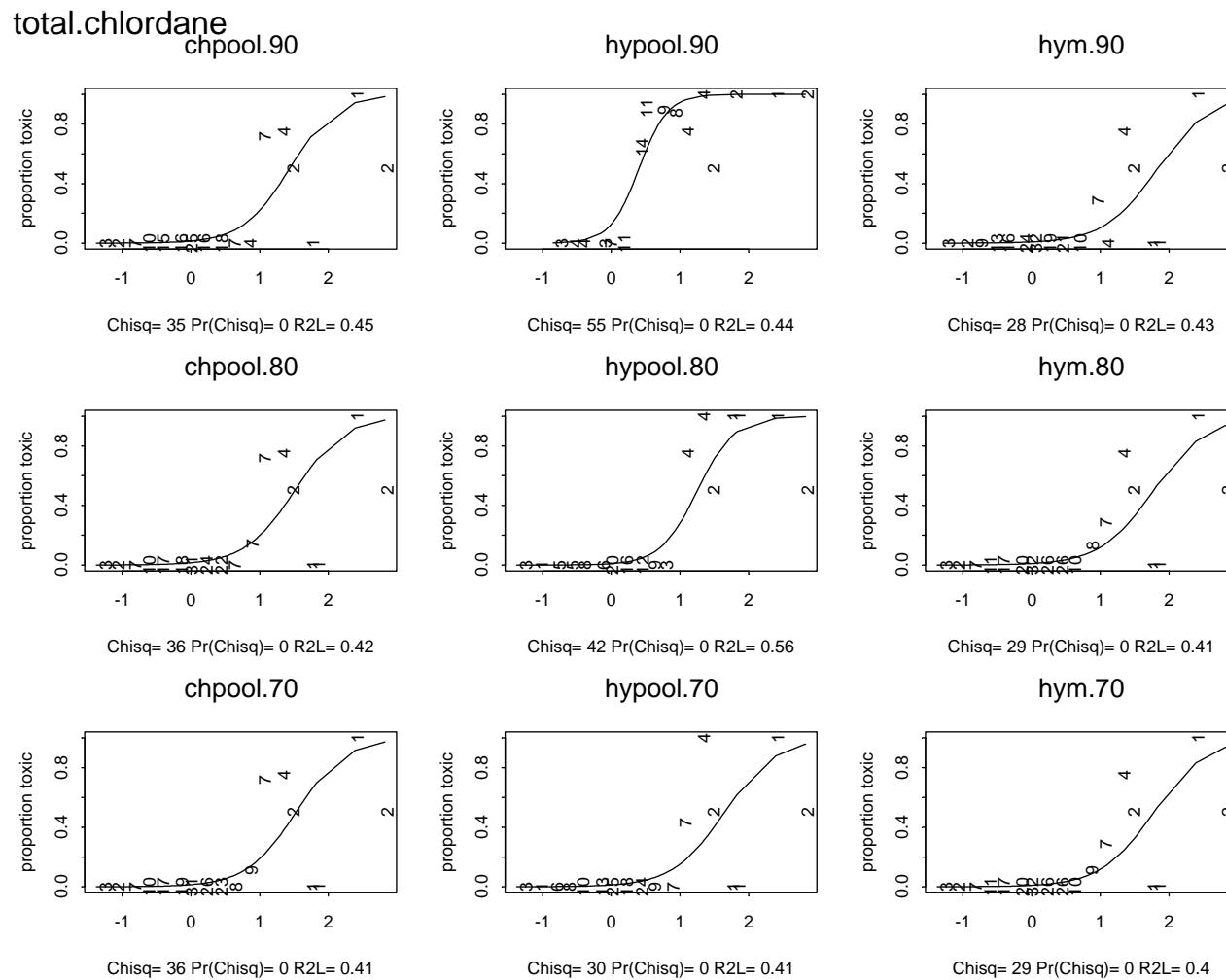


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-54. Logistic regression model – trans-nonachlor

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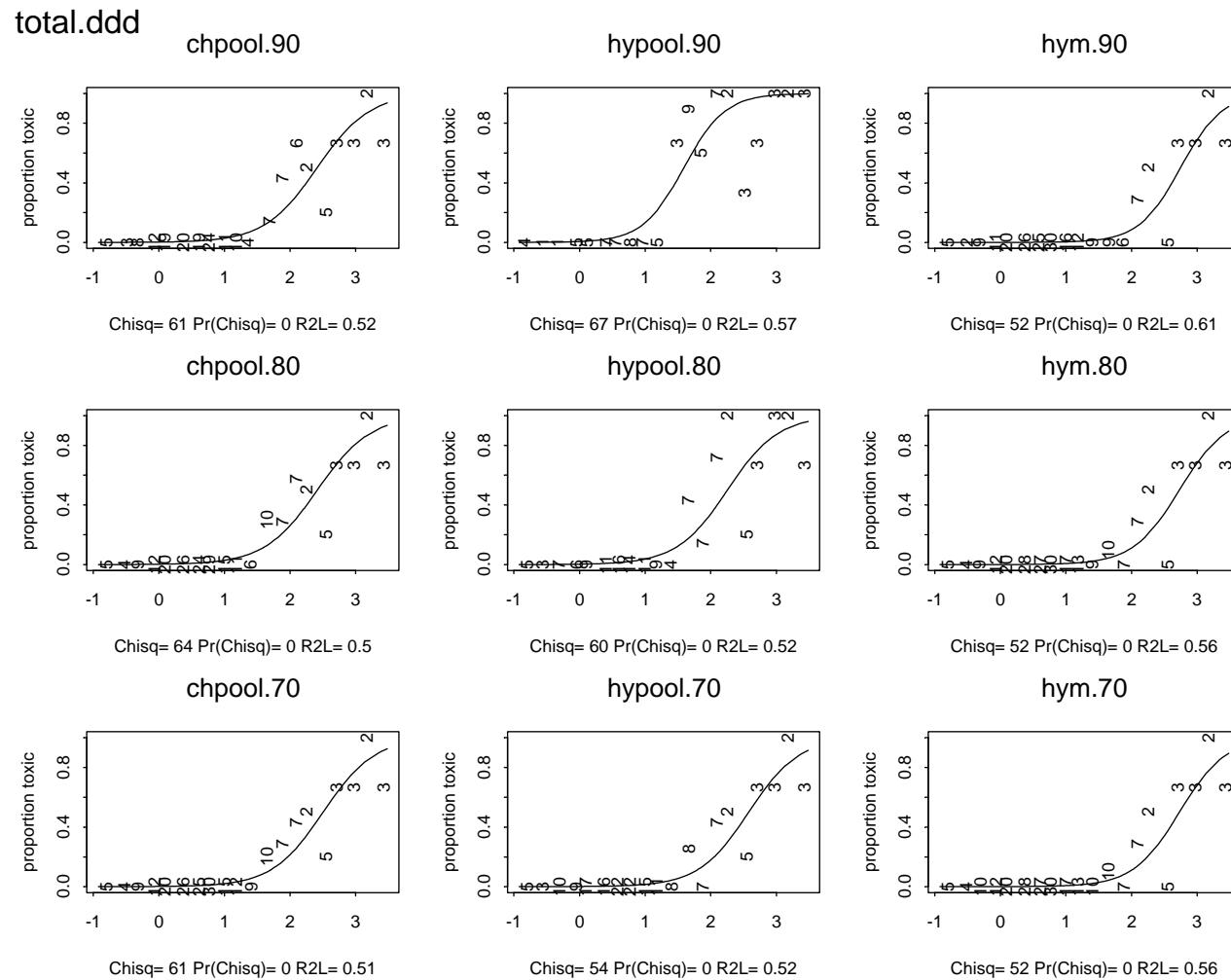


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-55. Logistic regression model – total chlordane

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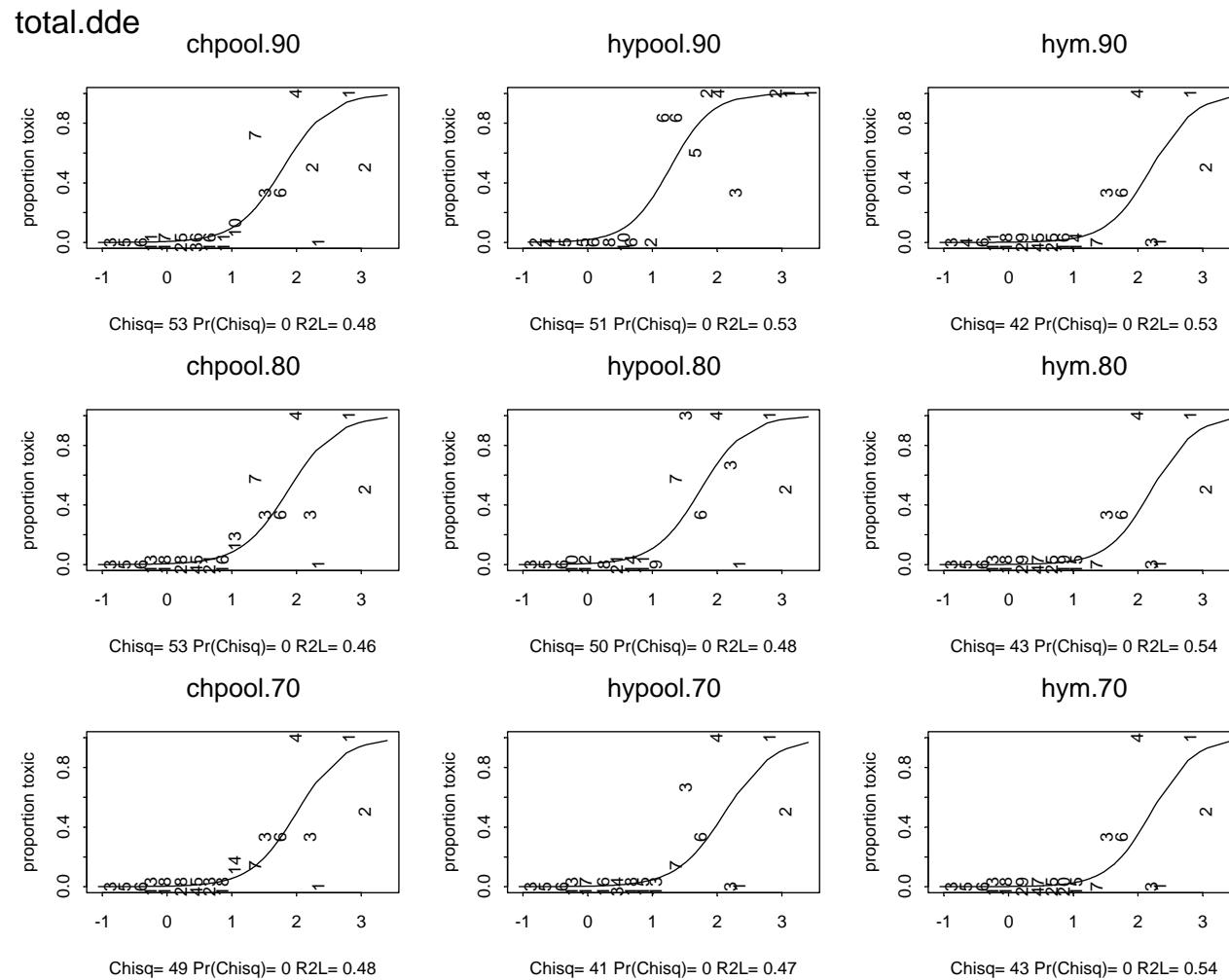


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-56. Logistic regression model – total DDD

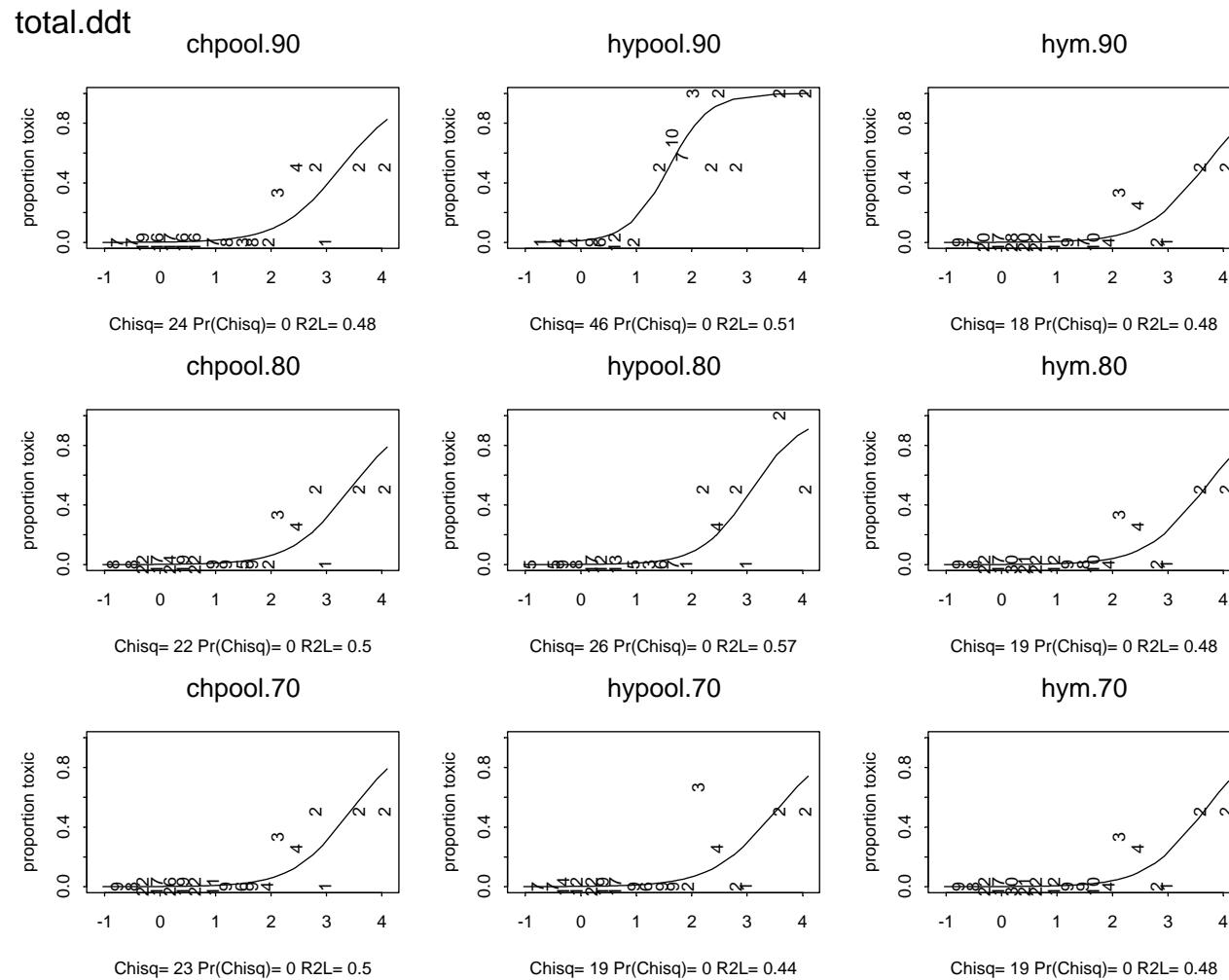
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Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-57. Logistic regression model – total DDE

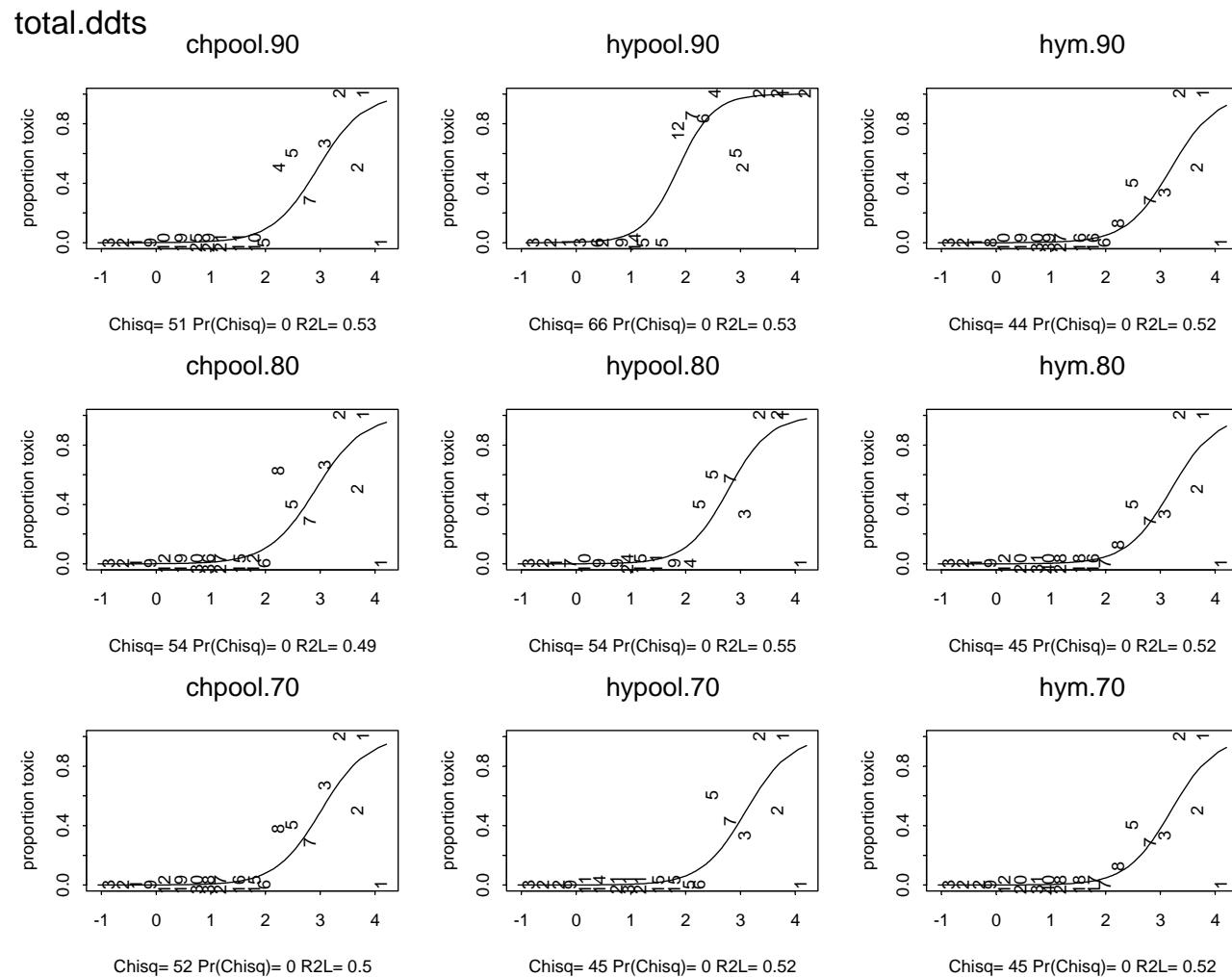


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-58. Logistic regression model – total DDT

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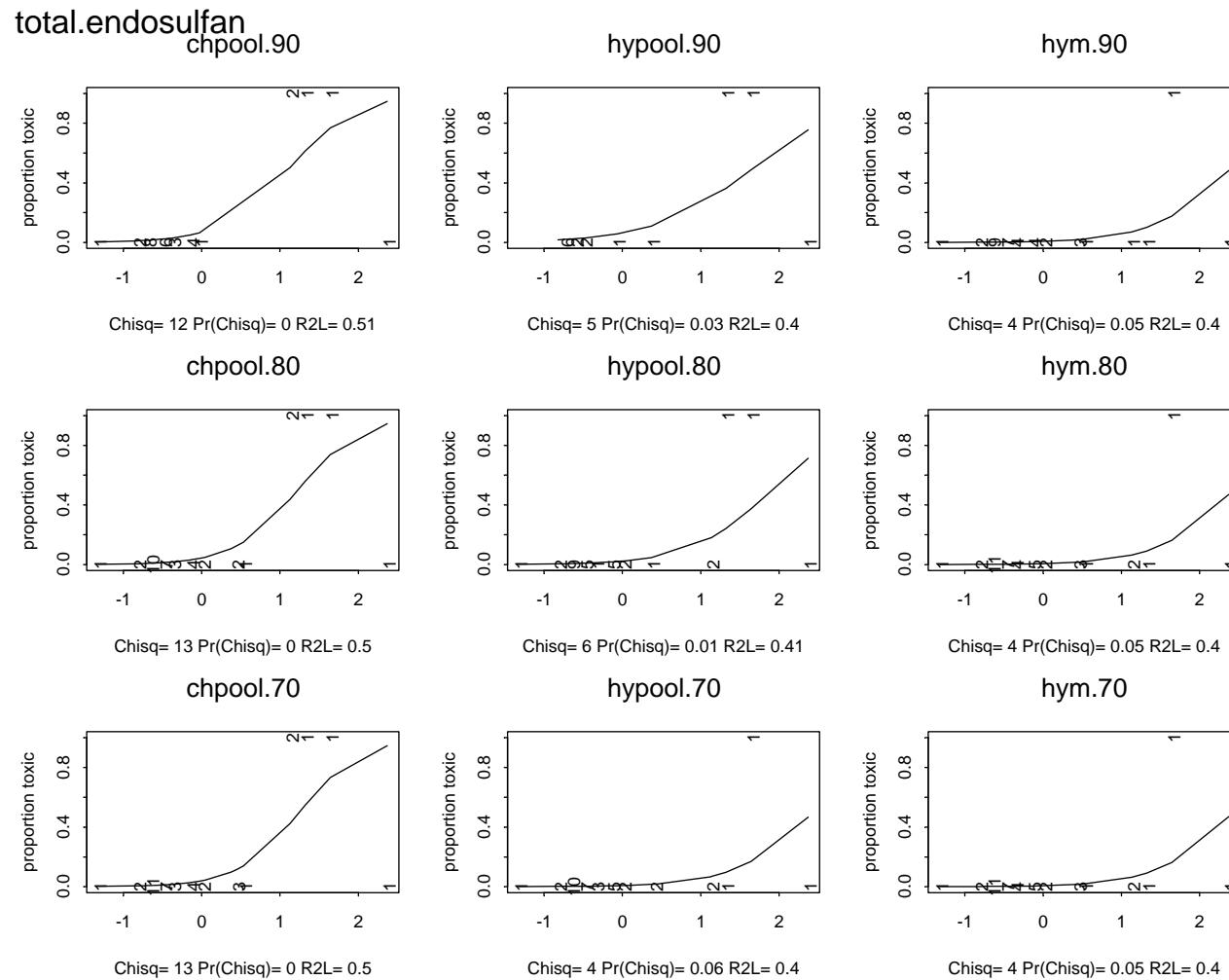


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level (L1 = .90; L2 = .80; L3 = .70).

Figure E-59. Logistic regression model – total DDTs

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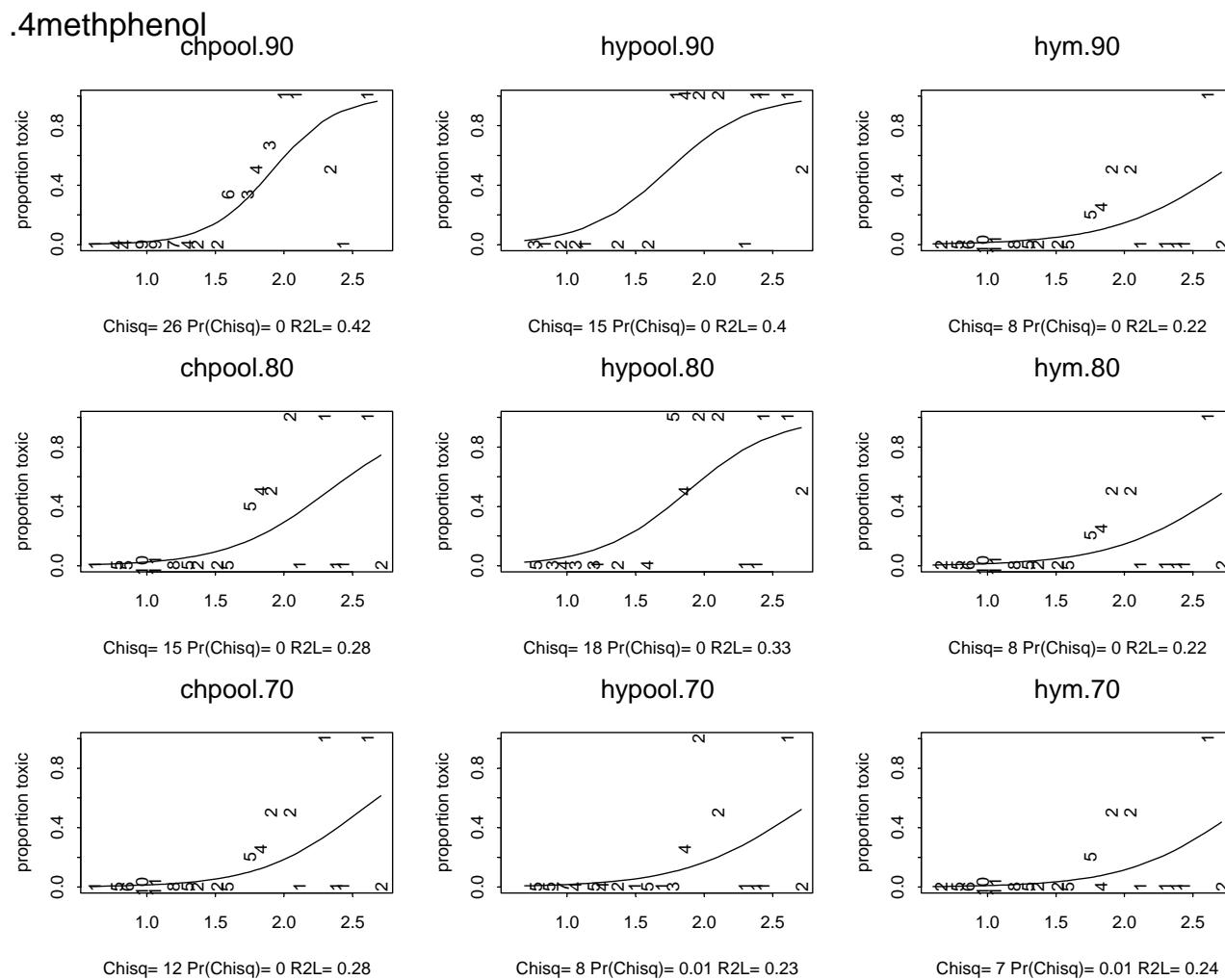


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-60. Logistic regression model – total endosulfan

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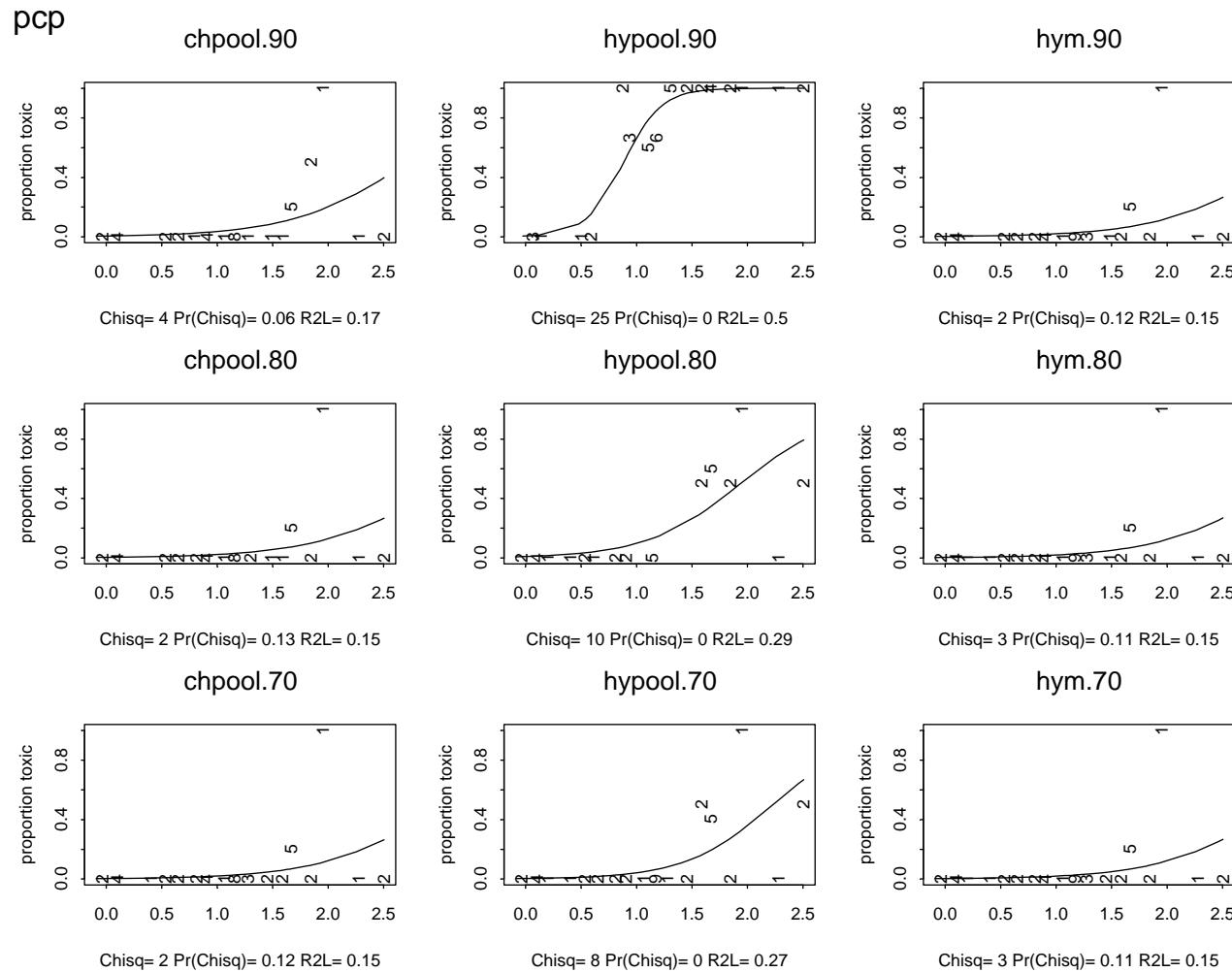


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-61. Logistic regression model – 4-methylphenol

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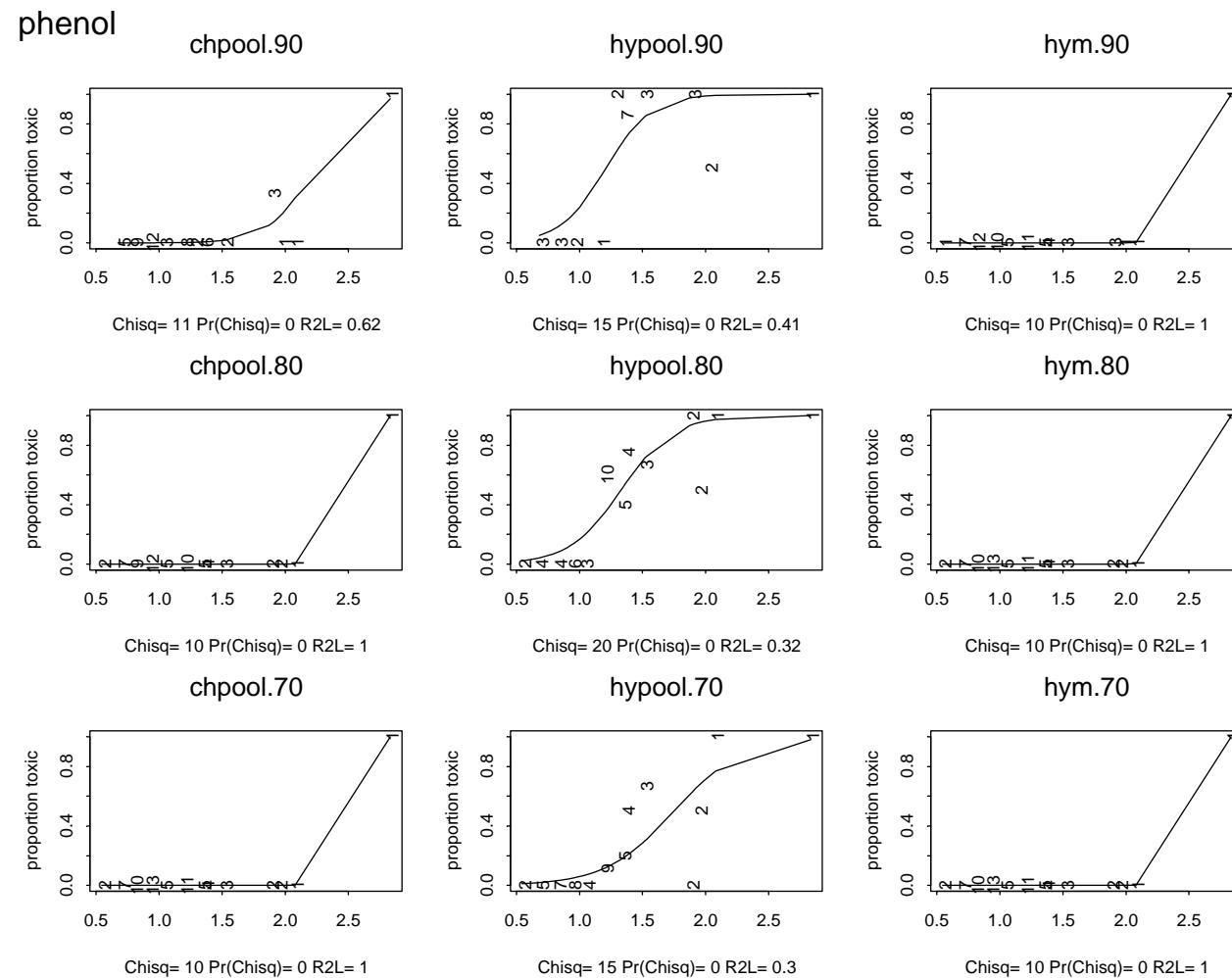


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-62. Logistic regression model – pentachlorophenol

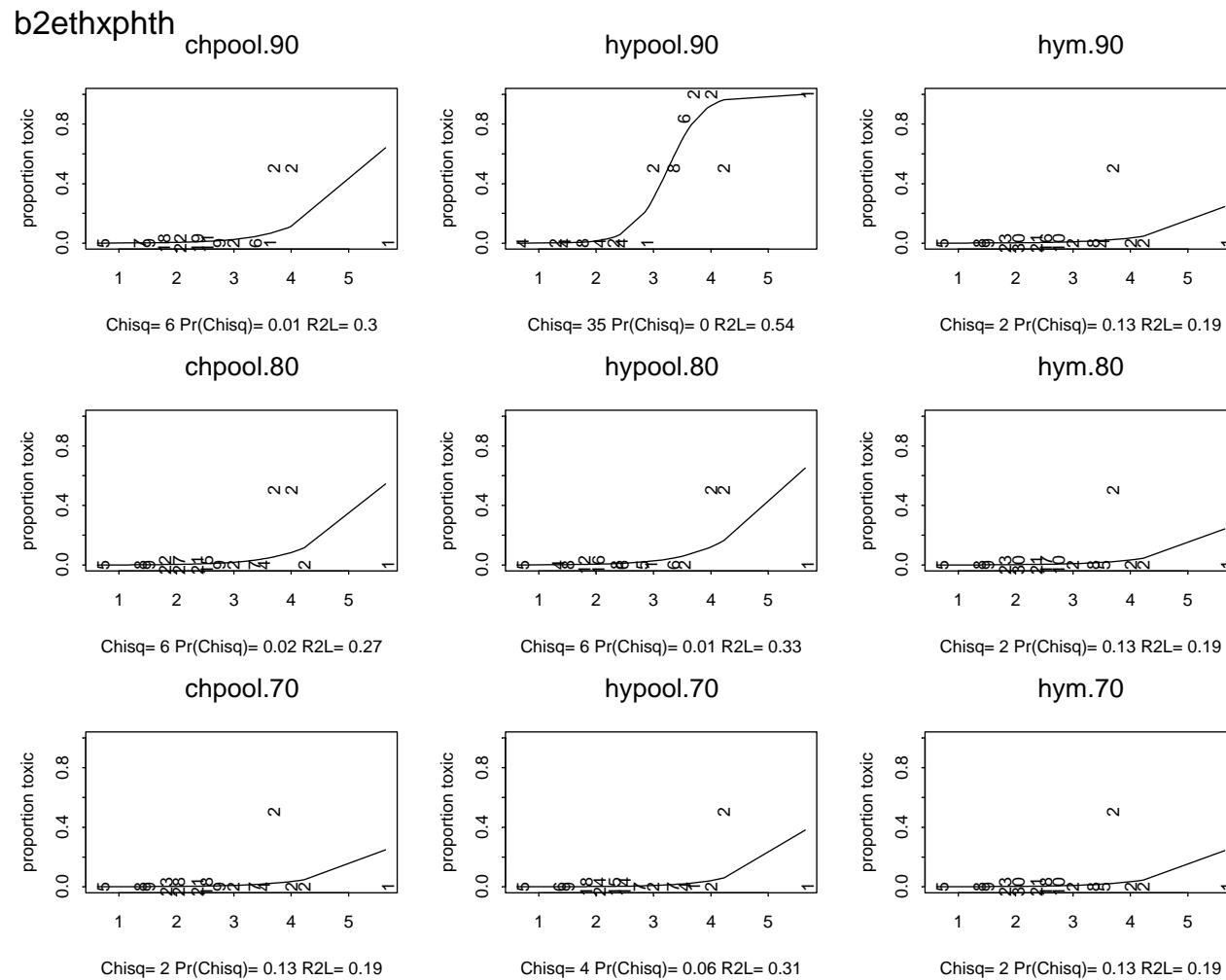
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Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level (L1 = .90; L2 = .80; L3 = .70).

Figure E-63. Logistic regression model – phenol

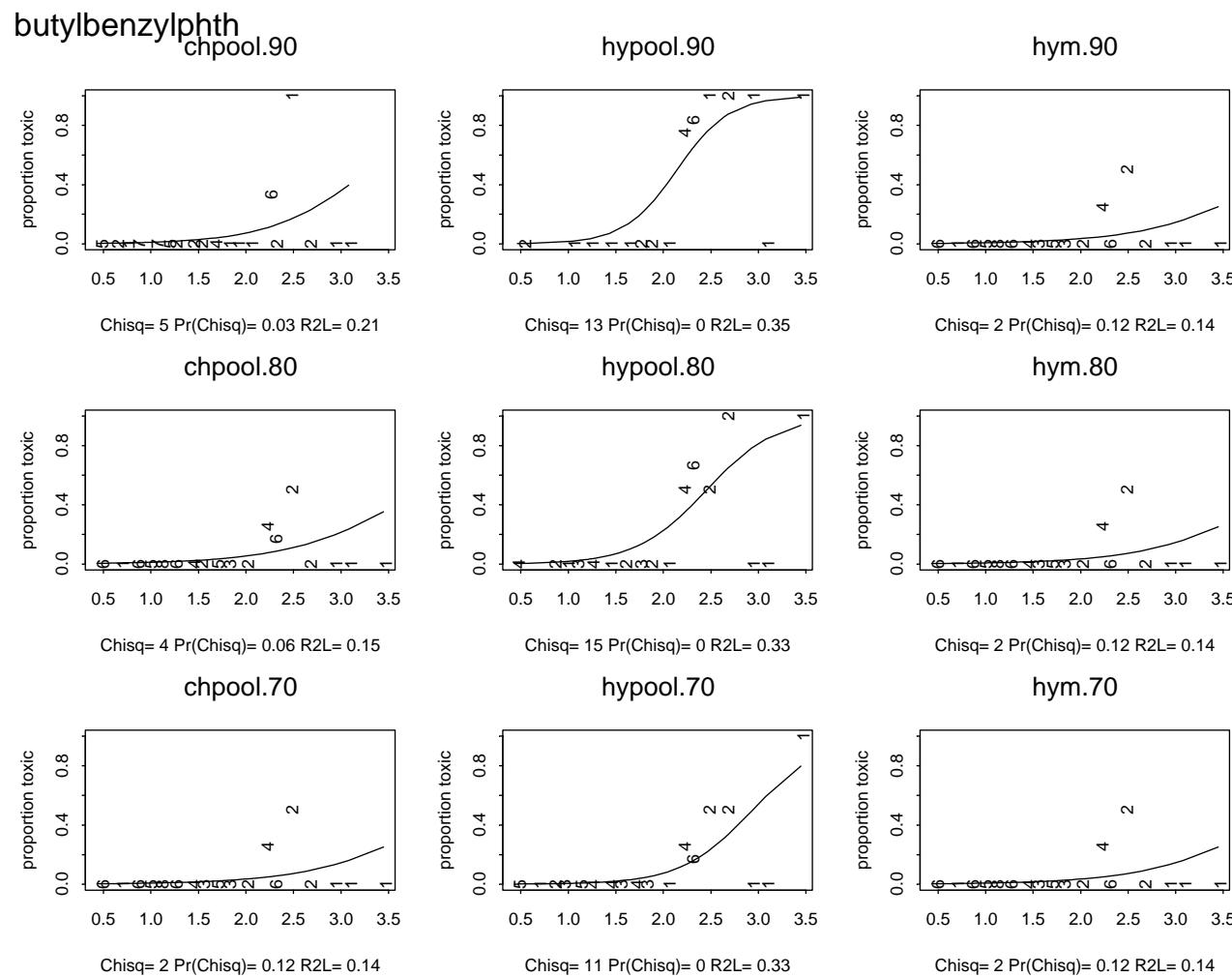


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-64. Logistic regression model – bis(2-ethylhexyl)phthalate

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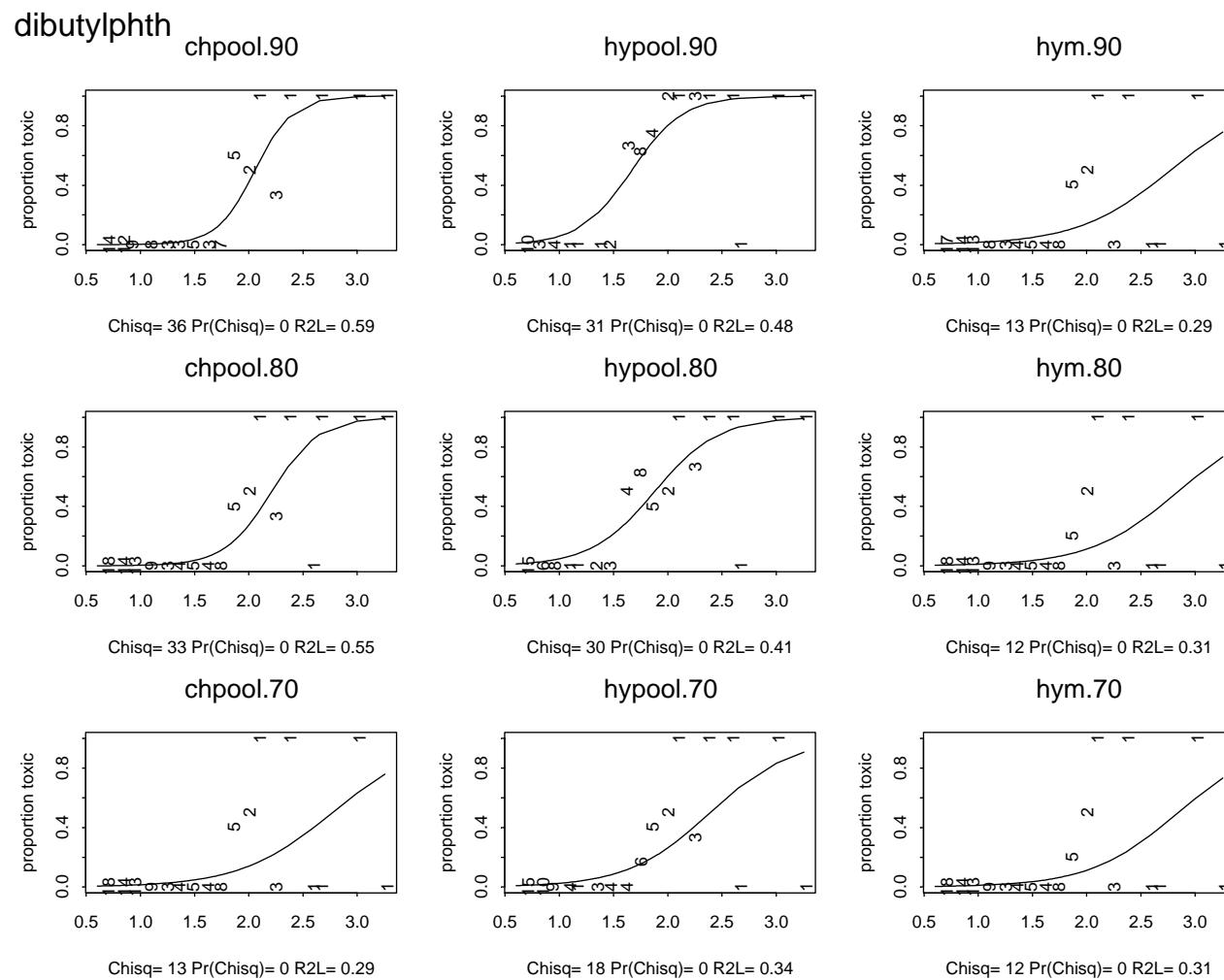


Note: all plots in a column are for one toxicological endpoint (i.e., *Chironomus* pooled, *Hyalella* pooled, and *Hyalella* mortality), and all graphs in a row are for one effects level ($L_1 = .90$; $L_2 = .80$; $L_3 = .70$).

Figure E-65. Logistic regression model – butylbenzylphthalate

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Figure E-66. Logistic regression model – dibutylphthalate

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